

**CLEANUP PLAN – NORTH YARD AREA  
FORMER CERRO METAL PRODUCTS BELLEFONTE FACILITY  
SPRING TOWNSHIP, CENTRE COUNTY, PENNSYLVANIA  
PADEP FACILITY ID #14-17981  
PERMITTED FACILITY ID#722112 AND REMEDIAL ID #39034**

April 2011

Prepared for:

The Marmon Group, LLC  
Chicago, Illinois

Prepared by:

Chambers Environmental Group, Inc.  
Bellefonte, Pennsylvania

Reviewed by:

Steven James Treschow

Steven James Treschow, Professional Geologist



April 11, 2011

Ms. Cheryl Sinclair, P.G.  
Pennsylvania Department of Environmental Protection  
Environmental Cleanup Program  
208 West Third Street, Suite 101  
Williamsport, PA 17701

**RE: Cleanup Plan – North Yard Area**  
**Former Cerro Metal Products Bellefonte Facility**  
**Spring Township, Centre County, Pennsylvania**  
**PADEP Facility ID #14-17981**  
**Permitted Facility ID#722112 and Remedial ID #39034**

Dear Ms. Sinclair:

Chambers Environmental Group, Inc. (Chambers) is pleased to provide this Cleanup Plan for the remediation of shallow groundwater beneath the North Yard of the former Cerro Metal Products facility located in Bellefonte, Pennsylvania (PA) for your review and comment. This Cleanup Plan contains a brief summary of the project, a brief description of the regulatory structure, a conceptual site model, a brief summary of interim remedial activities completed in the North Yard area, and a description of the technology, methods, and procedures to be utilized for remediation.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew C. Whitman".

Matthew C. Whitman  
Project Manager

A handwritten signature in black ink, appearing to read "Steven J. Treschow".

Steven J. Treschow, P.G. CPG  
Professional Geologist

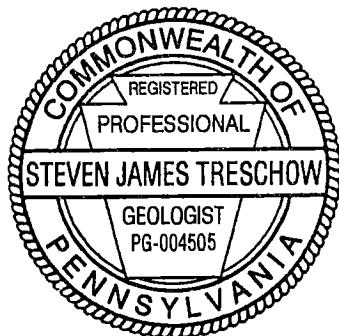
Enclosure

cc: Mr. Ray Avendt, Ph.D., P.E., The Marmon Group  
Mr. Gerrit Van Tilburg, Bolton Metal Products  
P:\2000 PROJECTS\2008\08-061710 - North Yard Remediation Task 20\Cleanup Plan 04.05.11.doc

## PROFESSIONAL GEOLOGIST CERTIFICATION

I, Steven James Treschow, a Registered Professional Geologist licensed in the Commonwealth of Pennsylvania (PG004505), have participated in the preparation of the document titled, "Cleanup Plan – North Yard Area, Former Cerro Metal Products Bellefonte Facility, Spring Township, Centre County, Pennsylvania, PADEP Facility ID#14-17981, Permitted Facility ID#722112 and Remedial ID #39034" I certify that the geologic and hydrogeologic content of this document, as prepared by the signing licensed Professional Geologist, are consistent with the applicable geologic and hydrogeologic standards of the Technical Guidance Manual for Pennsylvania's Land Recycling Program and Act 2.

Steve James Treschow  
Steven James Treschow, Professional Geologist



(Original Document bears Crimp Seal, Stamp, and Signature)

## TABLE OF CONTENTS

<b>1.0 SUMMARY AND REGULATORY STRUCTURE .....</b>	<b>1</b>
<b>2.0 CONCEPTUAL SITE MODEL AND INTERIM REMEDIAL ACTIONS .....</b>	<b>4</b>
<b>3.0 REMEDIAL TESTING, OBJECTIVES AND SCREENING.....</b>	<b>5</b>
3.1 Remedial Feasibility Testing .....	5
3.2 Remedial Objectives .....	5
3.3 Aquifer Testing .....	6
3.3.1 Step Draw Down Pump Test on RW-1 (10-inch).....	6
3.3.2 Step Draw Down Pump Test on RW-2 (10-inch).....	8
3.4 Aquifer Pumping Test Data Analysis .....	11
3.5 Aquifer Pumping Test Data Evaluation.....	12
3.6 Remedial Alternatives Screening & Summary .....	12
<b>4.0 REMEDIAL CLEANUP PLAN .....</b>	<b>14</b>
4.1 Treated Groundwater Disposal Evaluation .....	14
4.2 Remedial System Configuration .....	17
<b>5.0 REFERENCES .....</b>	<b>19</b>

## LIST OF APPENDICES

- Appendix A – Remedial Figures
- Appendix B – AqteSolv™ Data Reports

## 1.0 SUMMARY AND REGULATORY STRUCTURE

The Marmon Group, a Berkshire Hathaway Company (Marmon), previously owned the stock of Cerro, before selling the stock to Bolton MKM Corporation (Bolton). As part of the sale's agreement, Marmon retained the environmental liability for the site. Marmon contracted Chambers Environmental Group, Inc. (Chambers) to assist in the process of obtaining an Act 2 Relief of Liability for the site using Pennsylvania Department of Environmental Protection's (PADEP) Statewide Health Standard (SHS) or the Site Specific Standard (SSS).

The Cerro site consists of approximately 150 acres, 19 of which the plant is located on. The site characterization has been conducted in phases over the past 17 years. Historically, a Consent Order and Agreement (COA) was issued by the Pennsylvania Department of Environmental Resources (PADER – now PADEP) on November 21, 1994 to address various issues regarding the characterization and remediation of certain areas of the Cerro plant. The PADER requested Cerro to address environmental and health and safety issues within and around the plant. These issues are presented below along with the date that the issue was completed by either Cerro or the consultant.

**Table 1**  
**COA Requirements**

COA Issue	Obligation	Date Completed	Notes
Immediate Response Measures	Sediments and sludge removed at outfall samples SED 40 and 44	July 29, 1994	
	Address baghouse dust	June 21, 2005	Air permit was modified
	Remediate metals and PCBs in existing soils, slag, sediment, dust and metal fines	February 14, 1994	Letter detailing analytical results of Plant 4 baghouse; Currently ongoing through Act 2 process
	Plug Unused Drains and prevent drains discharge to Logan Branch	2007 through 2008	Drains are identified and subsequently abandoned
	Pave previously unpaved areas	1994	All areas of plant have been paved by this date
	Stabilize stream banks	March 29, 1995	
Current Health Screening Documents	Submit all documentation for past five years	December 2, 1994	
Remediation Reporting	Submit report detailing remediation for past seven years	October 1, 1994	
Fish Tissue & Stream Sediment Monitoring	Submit biennial fish tissue samples for total PCBs, Pb, Cu, and Zn	October 31, 1994	December 2000, PADEP concluded not necessary to analyze fish tissue from Logan Branch
	Sample Logan Branch sediment for PCBs, Pb, Cu, Zn	October 10, 1995	
Response Work Qualifications	Retain qualified consultants	Multiple consultants have been hired to complete work at the plant	Geraghty & Miller, Mountain Research were retained

COA Issue	Obligation	Date Completed	Notes
Work Plan Submittal to PADEP	Work plan must be Approved by PADEP to address COA	October 1, 1995	
Additional Assessment Activities	Surface water seeps to be tested	March 31, 1996	
	Sediment Study and Spring Creek Assessment	March 31, 1996	
	Streambank assessment	March 1, 1995 and March 31, 1996	
	Airborne Particles – Assess air dispersion and Pb, Cu, Zn contamination	June 2, 1997	Summary of soil quality conditions of hillsides
Detailed Site Plan	Site Characterization Work Plan	October 19, 1994	Volumes I, II, III submitted by Geraghty & Miller
Site Remediation Plan	Site Remediation Plan	February 2, 1995	Habitat improvement has been completed under supervision of Mark Hartle, PA Fish & Boat Commission
	Groundwater contamination	Currently under Act 2 process	
	Soil Contamination	Currently under Act 2 process	
	Logan Branch fine stream sediments remediation	February 17, 1995	Great Lakes Environmental Services completed this work
	Stormwater permits	Currently in place	
Water Supply	Cerro shall report on all public and private supply wells within 2,500 feet of the site	January 17, 1995	Completed by Geraghty & Miller

There are other requirements within the COA, however, these issues largely pertain to permit requirements, reporting requirements, civil penalties, stipulated penalties, oversite costs, and transfer of the site and these are not pertinent to this report. Therefore, there are no outstanding issues regarding the COA and due to the initiation of the Act 2 Land Recycling Program, the COA has been superseded and Chambers is addressing the groundwater and soil contamination through the characterization and remediation currently taking place.

As part of the characterization process, revised Notice Of Intent to Remediate (NIR) documents were resubmitted in July of 2009 to address specific sites as defined in PA Code, Title 25, Chapter §250.1. The characterization resulted in the identification of six distinct areas: the North Yard, Plant 1, South Spring, Plant 4, South Yard, and the Eastern Hillside. Each of the six areas were characterized and the results of the investigation were summarized in Volume I of II of the March 31, 2010 Remedial Investigation Report (RIR) (Chambers, 2010). The site characterization revealed soils and groundwater beneath the North Yard portion of the site were impacted with volatile organic compounds (VOCs). The PADEP approved the RIR in correspondence dated

July 2, 2010. The PADEP assigned the North Yard site Permitted Facility ID#722112 and Remedial ID #39034.

In accordance with PA Code, Title 25, Chapter § 250.410, a Cleanup Plan must be prepared when the SSS is a potential remedial goal for a site. The submission of this Cleanup Plan does not exclude the pursuit of SHS as a remedial goal, but is being prepared with the understanding that SSS may be the remedial goal for the site. Chapter 250.410 specifies that a Cleanup Plan should evaluate the relative abilities of the selected remedial alternative(s) to achieve the selected standard. This Cleanup Plan has been prepared to present the remedial approach selected for the remediation of unsaturated soil and shallow groundwater in the North Yard area. A site location map of the Cerro site and Site Plan of the North Yard are presented in **Appendix A, Figures 1 and 2**, respectively.

## **2.0 CONCEPTUAL SITE MODEL AND INTERIM REMEDIAL ACTIONS**

The subsurface media beneath North Yard can be divided into four general stratigraphic horizons: pavement/gravel fill, slag, natural silt loam/loam soil layer, and bedrock. VOCs (primarily trichloroethylene (TCE)) and carbon tetrachloride are present in shallow groundwater beneath the middle portion of the North Yard area, specifically in front of Plant 6 and the most northeastern portion of the yard area. Impacts to both soil and shallow groundwater were adequately delineated as part of the site characterization.

As identified in the RIR, TCE was reportedly present at concentrations in soil above the PADEP Used-Aquifer ( $\leq 2,500$  milligrams per liter (mg/L) total dissolved solids (TDS)) Non-Residential Statewide Health Standard (UANRSHS) Medium Specific Concentrations (MSCs) across the North Yard area. There were 61 soil samples (26 soil boring locations and four wastewater line locations) exceeding the TCE PADEP UANRSHS MSC ranging from 0.513 mg/kg to 82.9 mg/kg. Typically, the concentrations of TCE contamination in soils appear to be elevated just below the surface to approximately six feet below ground surface (ft-bgs); however, there are several borings where higher TCE concentrations were identified at depth.

Multiple potential source areas were identified to determine if a soil excavation was warranted to aid in the remediation of the site. Chambers did not identify any particular source areas, however, it was discovered that before the site was covered in asphalt, the gravel area was routinely sprayed down with waste oil and waste solvents for dust control. This explains why a majority of the soil contamination was identified in the shallow soils and not at depth. The soil contamination will be addressed through either SSS or synthetic precipitation leaching procedure (SPLP) using the soil-to-groundwater comparison.

Groundwater beneath the North Yard area first occurs in the slag horizon and extends into the natural soil below. The adjacent stream (Logan Branch) is hydraulically connected to groundwater beneath North Yard. Two 10-inch strategically placed recovery wells were installed for aquifer testing and to potentially aid in recovering contaminated groundwater in these areas. Two 72-hour step drawdown pump tests were conducted on these areas as part of the remedial feasibility testing and the results are presented in the following section.

## **3.0 REMEDIAL TESTING, OBJECTIVES AND SCREENING**

### **3.1 Remedial Feasibility Testing**

Remedial feasibility testing was completed at the North Yard site in order to facilitate the selection of an appropriate remedial technology for impacted unsaturated soil and shallow groundwater.

Chambers installed two 10-inch recovery wells in two distinct areas that have elevated concentrations of TCE and/or carbon tetrachloride in the shallow groundwater. Two 72-hour step drawdown pump tests were completed to evaluate the characteristics of the shallow aquifer and evaluate the potential for groundwater extraction and treatment for groundwater remediation. The results of the aquifer tests are presented in Section 3.3.

Based upon the results of the aquifer tests and in order to facilitate a potential groundwater extraction and treatment system, Chambers also evaluated the potential for treated groundwater reinjection into the subsurface. The reinjection of treated groundwater would eliminate the need to discharge permitting, routine sampling in relation to a permit, and would also provide a beneficial flushing affect in the shallow aquifer.

SPLP testing was conducted in the North Yard on soil samples from soil borings SB-3U, SB-4U, SB-7U, SB-10U, SB-12U, SB-17U, SB-1B, SB-7B, and SB-9B. The soil samples were analyzed for total concentrations of the constituents that exceed the PADEP UANRSHS MSC. Once analyzed, the results were compared to the PADEP soil-to-groundwater UANRSHS MSC (saturated or unsaturated conditions). Due to one or more of the soil samples exhibiting total concentrations above their respective PADEP soil-to-groundwater UARNSHS MSC, the four samples with the highest constituent concentration were analyzed using the SPLP process. The results of the SPLP process confirmed that the total concentration from the soil sample could be used as the SHS comparison.

Soil Excavation was evaluated as a potential remedial alternative for impacted soil. Multiple soil investigations were conducted to determine a source area, but the degree and spatial density of the constituent concentrations were not sufficient to warrant a soil excavation.

### **3.2 Remedial Objectives**

The purpose of the Cleanup Plan is to accomplish particular Remedial Action Objectives (RAOs). The RAOs for North Yard are as follows:

- To gain a further understanding of the hydraulics in the North Yard area.
- To reduce concentrations of VOCs in groundwater via active remediation.
- Ensure minimal impacts to Logan Branch from selected remedial alternative.

The selected remedial approach will be designed to evaluate and/or accomplish each of the RAOs.

### 3.3 Aquifer Testing

Two 72-hour step drawdown pump tests were conducted to evaluate the characteristic of the shallow aquifer and to confirm the potential to extract groundwater from the subsurface at a sufficient rate to remediate shallow groundwater. Chambers conducted two separate aquifer pump tests on recovery wells RW-1 (10-inch) and RW-2 (10-inch). The results are presented in the following text.

#### 3.3.1 Step Draw Down Pump Test on RW-1 (10-inch)

In order to gain a better understanding of the hydrogeology of the overburden aquifer and evaluate potential remedial options for the site, Chambers conducted two 72-hour step drawdown aquifer pumping tests in the North Yard. The first pump test was conducted on recovery well RW-1 (10-inch) on December 6-9, 2010. The test began as a step-draw down pump test to determine the maximum yield the well could produce, but not pump the well dry.

The aquifer pumping test infrastructure consisted of 2-inch inner diameter (ID) polyvinyl chloride (PVC) pipe connected to a grundfos pump in RW-1 (10-inch) which was connected to a 500 pound granular activated carbon (GAC) unit. The discharge from the GAC was gravity fed to the sewer line that is discharged to the Bellefonte Borough Wastewater Treatment Plant (BBWWTP).

Prior to initiating the aquifer pumping test, depth-to-groundwater was measured using an electronic water level indicator on a select group of monitoring wells around the RW-1 (10-inch) pumping well to record the presumably static groundwater elevations. A groundwater potentiometric surface contour map of pre-pump conditions can be found in **Appendix A, Figure 3**. Additionally, pressure transducers (In-Situ Level TROLL® 700) were placed in wells MWNY-2, SB-3B-S4, SB-3B-S5, SB-14U-S2, SB-15U-S, RW-1 (4-inch), and RW-1 (10-inch) (pumping well). The pressure transducers were installed several days prior to initiating pumping in order to record background conditions and establish baseline groundwater elevations. After completing the aquifer pumping test, the pressure transducers remained in the wells for approximately 72 hours to monitor groundwater recovery. A potentiometric surface contour map for the end of the pump test can be found in **Appendix A, Figures 4**.

The 72-hour step drawdown aquifer pumping test was initiated on December 6, 2010 at 1200 hours and ended on December 9, 2010 at 1200 hours. Approximately 70,911 gallons of groundwater was recovered/extracted from RW-1 (10-inch) at an average continuous pumping/extraction rate of 16.4 gpm during the 72-hour step drawdown aquifer pumping test. The optimal pumping rate that Chambers observed during the test was 18.0 gpm.

The groundwater elevations in the pre-selected wells at the site were measured with pressure transducers and/or measured using an electronic water level indicator at the beginning of the pump test. Depth-to-groundwater was measured with an electronic water level indicator in the wells prior to the start of the aquifer pumping test on December 6, 2010 (static (pre-pump) conditions), during the test, and at the conclusion (prior to RW-1 (10-inch) pump shut-down) of the test on December 9, 2010 (72-hour drawdown (post-pump) conditions). The groundwater elevation data obtained from the aquifer pumping test manual measurements (water level indicator) is presented in Table 2.

**Table 2**  
**Pre-Pump and Pre-Shutdown Pump Test Groundwater Elevation Data**  
**December 6 and December 9, 2010**

Well ID	Top of Casing Elevation	Pre-Pump Depth-to-Groundwater	Pre-Pump Groundwater Elevation	Pre-Shutdown Depth-to-Groundwater	Pre-Shutdown Groundwater Elevation	Change in Groundwater Elevation
SB-14U-S2	771.23	9.83	761.40	10.11	761.12	0.28
SB-15U-S	771.20	10.93	760.27	12.03	759.17	1.10
RW-1 (10-inch)	771.10	10.75	760.35	17.65	753.45	6.90
RW-1 (4-inch)	771.00	10.75	760.25	11.61	759.39	0.86
SB-3B-S5	770.30	10.22	760.08	10.33	759.97	0.11
SB-3B-S4	768.99	9.47	759.52	9.73	759.26	0.26
MWNY-2	770.33	10.56	759.77	10.74	759.59	0.18

Notes: Results are reported in feet (ft).

Depth-to-groundwater results are reported in feet below top of casing (ft-btoc).

Bold values indicate observed drawdown.

Shaded cells indicate pumping well.

As indicated in Table 2, the drawdown (displacement) values observed across the site for the wells (pump test observation wells) ranged from 0.11 feet of drawdown (SB-3B-S5) to 1.10 feet of drawdown (SB-15U-S). A drawdown of 6.90 feet was observed in pumping/extraction well (RW-1 (10-inch)). Drawdown was observed in the entire monitored well network. Groundwater potentiometric surface contour maps for the December 6, 2010 pre-pump (static) conditions and the December 9, 2010 72-hour drawdown (post-pump) conditions are presented in **Appendix A, Figures 3 and 4** respectively.

Groundwater recovery was monitored for approximately four hours to 72 hours to 168 hours following the completion of the 72-hour step drawdown aquifer pumping test. Depth-to-groundwater was measured with an electronic water level indicator in the wells at the conclusion of the pumping test on December 9, 2010 (72-hour drawdown (post-pump) conditions). The groundwater elevation data obtained from the groundwater recovery period is presented in Table 3.

**Table 3**  
**Pre- and Post-Pump Test Groundwater Elevation Data**  
**December 6 and 9, 2010**

Well (ID)	Top of Casing Elevation	Pre-Pump Depth-to-Groundwater	Pre-Pump Groundwater Elevation	Recovery End Depth-to-Groundwater	Recovery End Groundwater Elevation	Change in Groundwater Elevation
SB-14U-S2	771.23	9.83	761.40	10.05	761.18	-0.22
SB-15U-S	771.20	10.93	760.27	11.15	760.05	-0.22
RW-1 (10-inch)	771.10	10.75	760.35	11.03	760.07	-0.28
RW-1 (4-inch)	771.00	10.75	760.25	11.28	759.72	-0.53
SB-3B-S5	770.30	10.22	760.08	10.30	760.00	-0.08
SB-3B-S4	768.99	9.47	759.52	9.63	759.36	-0.16
MWNY-2	770.33	10.56	759.77	10.68	759.65	-0.12

Notes: Results are reported in ft.

Depth-to-groundwater results are reported in ft-btoc.

Bold values indicate water levels returning to pre-pump levels or greater.

Shaded cells indicate pumping well.

As indicated in Table 3, recovery occurred in the pumping well as well as the monitoring wells within four hours of shut down. Drawdown and recovery data from the wells monitored by pressure transducers (MWNY-2, SB-3B-S4, SB-3B-S5, SB-14U-S2, SB-15U-S, RW-1 (4-inch), and RW-1 (10-inch) (pumping well)) were graphed by the WinSitu5® program, which visually illustrates the drawdown/recovery data against time. These graphs along with the results of the pumping test data analysis are presented in Appendix B.

### 3.3.2 Step Draw Down Pump Test on RW-2 (10-inch)

A 72-hour step drawdown aquifer pump test was conducted on RW-2 (10-inch) due to the relative success of the pump test on RW-1 (10-inch) and due to elevated constituent concentrations in groundwater around the RW-2 (10-inch) area. Chambers conducted the pump test on recovery well RW-2 (10-inch) from January 31, 2011 to February 3, 2011. The test began as a step drawdown pump test to determine the maximum sustained yield the well could produce, but not pump the well dry.

The aquifer pumping test infrastructure consisted of 2-inch ID PVC pipe connected to a grundfos pump in RW-2 (10-inch) which was connected to a 500 pound GAC unit. The

discharge from the GAC was gravity fed to the sewer line that is discharged to the BBWWTP.

Prior to initiating the aquifer pumping test, depth-to-groundwater was measured using an electronic water level indicator on a select group of monitoring wells around the RW-2 (10-inch) pumping well to record the presumably static groundwater elevations. A groundwater potentiometric surface contour map of pre-pump conditions can be found in **Appendix A, Figure 5**. Additionally, pressure transducers (In-Situ Level TROLL® 700) were placed in wells SB-3B-S3, SB-19U-S, SB-20U-S, SB-24U-S1, SB-24U-S2, SB-24U-S3, SB-24U-S4, PZ-NY-01-01, PZ-NY-02-01, RW-2 (4-inch), and RW-2 (10-inch)(pumping well). The pressure transducers were installed several days prior to initiating pumping in order to record background conditions and establish baseline groundwater elevations. After completing the aquifer pumping test, the pressure transducers remained in the wells for approximately 72 hours to monitor groundwater recovery. A potentiometric surface contour map for the end of the pump test can be found in **Appendix A, Figure 6**.

The 72-hour step drawdown aquifer pumping test was initiated on January 31, 2011 at 1400 hours and ended on February 3, 2011 at 1400 hours. Approximately 82,100 gallons of groundwater was recovered/extracted from RW-2 (10-inch) at an average continuous pumping/extraction rate of 19.0 gpm during the 72-hour step draw down aquifer pumping test.

The groundwater elevations in the pre-selected wells at the site were measured with pressure transducers and/or measured using an electronic water level indicator prior to the start of the aquifer pumping test on January 31, 2011 (static (pre-pump) conditions), during the test, and at the conclusion (prior to RW-2 (10-inch) pump shut-down) of the test on February 3, 2011 (72-hour drawdown (post-pump) conditions). The groundwater elevation data obtained from the aquifer pumping test manual measurements (water level indicator) is presented in Table 4.

**Table 4**  
**Pre-Pump Test and Pre-Shutdown Pump Test Groundwater Elevation Data**  
**January 31 and February 3, 2011**

Well ID	Top of Casing Elevation	Pre-Pump Depth-to-Groundwater	Pre-Pump Groundwater Elevation	Pre-Shutdown Depth-to-Groundwater	Pre-Shutdown Groundwater Elevation	Change in Groundwater Elevation
SB-3B-S3	768.67	9.85	758.82	9.86	758.81	<b>0.01</b>
SB-19U-S	770.38	12.95	757.43	13.49	756.89	<b>0.54</b>
SB-20U-S	772.20	14.48	757.72	14.50	757.70	<b>0.02</b>
SB-24U-S1	768.41	10.98	757.43	10.67	757.74	-0.31
SB-24U-S2	769.28	11.70	757.58	11.74	757.54	<b>0.04</b>
SB-24U-S3	769.29	11.86	757.43	11.94	757.35	<b>0.08</b>
SB-24U-S4*	768.03	9.46	758.57	9.48	758.55	<b>0.02</b>
PZ-NY-01-01	772.04	16.57	755.47	16.56	755.48	-0.01
PZ-NY-02-01	769.50	13.68	755.82	13.98	755.52	<b>0.30</b>
RW-2 (10-inch)	768.13	12.67	755.46	23.56	744.57	<b>10.89</b>
RW-2 (4-inch)	768.74	12.52	756.22	13.55	755.19	<b>1.03</b>

Notes: Results are reported in feet (ft).

Depth-to-groundwater results are reported in feet below top of casing (ft-btoc).

Bold values indicate observed drawdown.

Shaded cells indicate pumping well.

A negative, non-bold value indicates an increase in groundwater elevation.

\*Observed surface water infiltration.

As indicated in Table 4, the drawdown (displacement) values observed across the site for the wells (pump test observation wells) ranged from 0.01 feet of drawdown (SB-3B-S3) to 1.03 feet of drawdown (RW-2 (4-inch)). A drawdown of 10.89 feet was observed in pumping/extraction well (RW-2 (10-inch)). Drawdown was observed in the entire monitored well network except for SB-24U-S1 and SB-24U-S4. The field technicians observed surface water (melting snow) infiltrating into the manhole of monitoring well SB-24U-S1. Chambers assumes the groundwater elevations may have been altered by snow melt entering the well column due to its location. Groundwater potentiometric surface contour maps for the January 31, 2011 pre-pump (static) conditions and the February 3, 2011 72-hour drawdown (pre-shutdown) conditions are presented in Appendix A, Figures 5 and 6, respectively.

Groundwater recovery was monitored for approximately four hours to 72 hours to 120 hours following the completion of the 72-hour step draw down aquifer pumping test. Depth-to-groundwater was measured with an electronic water level indicator in the wells at the conclusion of the pumping test on February 3, 2011 (72-hour drawdown (post-pump) conditions). The groundwater elevation data obtained from the groundwater recovery period is presented in Table 5.

**Table 5**  
**Pre- and Post-Pump Test Groundwater Elevation Data**  
**January 31 and February 8, 2011**

Well ID	Top of Casing Elevation	Pre-Pump Depth-to-Groundwater	Pre-Pump Groundwater Elevation	Recovery End Depth-to-Groundwater	Recovery End Groundwater Elevation	Change in Groundwater Elevation
SB-3B-S3	768.67	9.85	758.82	9.84	758.83	0.01
SB-19U-S	770.38	12.95	757.43	13.49	756.89	-0.54
SB-20U-S	772.20	14.48	757.72	14.48	757.72	0.00
SB-24U-S1	768.41	10.98	757.43	10.62	757.79	0.36
SB-24U-S2	769.28	11.70	757.58	11.70	757.58	0.00
SB-24U-S3	769.29	11.86	757.43	11.87	757.42	-0.01
SB-24U-S4*	768.03	9.46	758.57	9.47	758.56	-0.01
PZ-NY-01-01	772.04	16.57	755.47	16.54	755.50	0.03
PZ-NY-02-01	769.50	13.68	755.82	13.66	755.84	0.02
RW-2 (10-inch)	768.13	12.67	755.46	12.71	755.42	-0.04
RW-2 (4-inch)	768.74	12.52	756.22	12.51	756.23	-0.01

Notes: Results are reported in ft.

Depth-to-groundwater results are reported in ft-btoc.

Bold values indicate water levels returning to pre-pump levels or greater.

Shaded cells indicate pumping well.

As indicated in Table 5, recovery occurred in the pumping well and the observation monitoring wells within five days of shut down. Drawdown and recovery data from the wells monitored by pressure transducers (SB-3B-S3, SB-19U-S, SB-20U-S, SB-24U-S1, SB-24U-S2, SB-24U-S3, SB-24U-S4, PZ-NY-01-01, PZ-NY-02-01, RW-2 (4-inch), and RW-2 (10-inch)(pumping well)) were graphed by the WinSitu5® program, which visually illustrates the drawdown/recovery data against time. These graphs along with the results of the pumping test data analysis are presented in Appendix B.

### 3.4 Aquifer Pumping Test Data Analysis

The data recorded in the pressure transducers placed in the observation and pumping wells was downloaded into a data logger. This data was uploaded from the data logger into WinSitu5® and AQTESOLV™ for Windows® programs. The WinSitu5® program takes the data stored in the data logger and allows it to be used by AQTESOLV™. This data, along with well construction data was entered into the AQTESOLV™ software. AQTESOLV™ calculates an estimation of coefficient of storage (S) and coefficient of transmissivity (T) for the aquifer. The coefficient of storage is mathematically dimensionless and represents an aquifer's ability to store water. The coefficient of transmissivity is defined by Driscoll, (1986) as the rate at which water flows through a vertical strip of the aquifer one foot wide and extending through the full saturated thickness, under a hydraulic gradient of one. The coefficient of transmissivity is used to

calculate the hydraulic conductivity (K). Hydraulic conductivity is defined as a constant of proportionality relating the specific discharge of a porous medium under a unit hydraulic gradient in Darcy's Law where  $K=T/b$  ( $b$  = aquifer thickness). The AQTESOLV™ generated data outputs and hydraulic conductivity values for the wells monitored are presented in Table 6.

**Table 6**  
**AQTESOLV™ Generated Data Outputs and Hydraulic Conductivity Values**

Well ID	Coefficient of Storage (S)	Coefficient of Transmissivity (T)	Hydraulic Conductivity (K)
RW-1 (10-inch)	0.1	8.482	0.9270
RW-2 (10-inch)	3.968	2.323	0.1827

Notes: Coefficient of Storage is unit-less.

Coefficient of Transmissivity results are reported in centimeters squared per second (cm<sup>2</sup>/sec).

Hydraulic Conductivity results are reported in centimeters per second (cm/sec).

The K value calculated for RW-1 (10-inch) pump test and RW-2 (10-inch) pump test were 0.9270 cm/sec and 0.1827 cm/sec respectively, with the average being 0.55485 cm/sec. Within AQTESOLV™, the Theis solution method was used to generate a corrected displacement analysis plot for the wells monitored. The AQTESOLV™ generated data output sheets are provided in **Appendix B**.

### **3.5 Aquifer Pumping Test Data Evaluation**

The 72-hour step draw down aquifer pumping test utilizing multiple observation wells has provided representative data for the estimation of hydrogeologic parameters for the overburden material beneath the site. Chambers assumes from the data that 18.0 gpm and 19.0 gpm pumping rates can be sustained in recovery wells RW-1 (10-inch) and RW-2 (10-inch) respectively, for a combined total sustained pumping rate of approximately 37.0 gpm. The average hydraulic conductivity value for the site, was 0.55485 cm/sec or 1,572.8 feet per day (ft./day), which is typical of fill material as published by Freeze and Cherry, 1979.

The K values, transmissivity, area-of-influence, and the overall results of the pump test indicate that extraction and treatment may be an effective means of treating the shallow groundwater at the site.

### **3.6 Remedial Alternatives Screening & Summary**

Two different options were evaluated in relation to soil; soil excavation and SPLP sampling. Multiple soil investigations were conducted to determine a source area, but the degree and spatial density of the constituent concentrations were not sufficient to warrant a soil excavation. Soil excavation was not retained as a feasible or effective remedial

alternative. The SPLP sampling and analysis indicated that the total concentration from the soil samples could be used as the SHS comparison instead of the MSC.

Monitored Natural Attenuation (MNA) was initially evaluated as a potential remedial alternative for shallow groundwater. MNA of TCE typically occurs via reductive dechlorination which requires a reducing (non-oxidative) environment. The naturally high ORP is indicative of an oxidative environment and explains why the TCE has not been degraded. Due to the close proximity of the TCE and carbon tetrachloride plumes to Logan Branch, Chambers believes active remediation is necessary since fate and transport modeling may not be conducive to the site at this time. It should be noted that Chambers has sampled the Branch's water at times and has not observed any constituents of concern being detected in the samples.

The aquifer testing completed in the North Yard indicated the ability to move a large volume of groundwater and recover dissolved-phase constituents. Therefore, groundwater extraction and treatment is to be retained as a potential remedial alternative for the site.

## **4.0 REMEDIAL CLEANUP PLAN**

The overall goal of the remedial action is to treat impacted groundwater and attain a release-of-liability for the selected standard. Groundwater extraction and treatment was selected as the remedial alternative based on the sustained pumping rate from the recovery wells, the cone of depression observed around the recovery wells, the area of influence observed, and the recovery of dissolved-phase constituents in shallow groundwater. Prior to configuring the system, Chambers evaluated the potential options for disposal of the treated groundwater.

### **4.1 Treated Groundwater Disposal Evaluation**

Various avenues have been investigated to dispose of the effluent groundwater from the groundwater extraction and treatment system. Due to the anticipation of a pumping rate of approximately 30-40 gpm, Chambers needs to be able to dispose of approximately 43,000-58,000 gallons a day. The following is a list of potential disposal methods that have been reviewed:

- Disposal of water through the sanitary sewer.
- Storage of water in tanks for resale for Marcellus Shale hydraulic fracturing operations.
- Reinjection of water into the upgradient subsurface.
- Pumping of water into the on-site secondary containment area and allowing water to seep into the subsurface along with evaporation.
- Gravity feed the treated water into Logan Branch through a National Pollutant Discharge Elimination System (NPDES) permit.

Chambers began the process of applying for a permit through Bolton for discharging the treated water through the existing sanitary sewer. However, Bolton did not want to discharge treated groundwater from the remediation system into their sanitary sewer due to liability reasons and removed Chambers from the permit. Furthermore, Chambers used the probable yearly total of treated water that would be discharged to the sanitary sewer and multiplied it by the billing rate that the treatment plant would bill. The amount of money spent to discharge clean treated water was not feasible or cost effective. Therefore, this idea is not to be retained as a viable alternative of disposing the treated water.

The idea of storing the water and selling it to drilling companies for hydraulic fracturing operations in relation to the Marcellus Shale was also investigated. The initial costs for storage of water, setting up a water depot, site security, and receiving permission for truck traffic on Bolton's property was not reasonable or cost effective. Therefore, this idea is not to be retained as a viable alternative of disposing the treated water.

Due to the subsurface being able to sustain a yield of approximately 30-40 gpm, it is assumed that the treated groundwater would be able to be reinjected into the subsurface at a similar rate. To confirm this, a series of injection points were installed into the subsurface. Two potential areas for reinjection were identified and two reinjection points were installed in each area. One area was east of Plant 6 and the sanitary sewer line, while the second area was east of the storage sheds in the northern most part of the North Yard. The locations can be viewed in **Appendix A, Figure 7**. The 2-inch injection points were installed in the non-saturated subsurface with the shallow injection point being installed to a depth of 4 ft-bgs and a deeper injection point being installed to 9 ft-bgs. The deeper injection point was constructed with screen from 9 ft-bgs to 2 ft-bgs while the shallow injection point screened interval was from 4 ft-bgs to 2 ft-bgs. The annular portion of each screened portion of the injection point was filled with sand to approximately 0.5 feet above the screen (1.5 ft-bgs). The remaining annular space was filled with bentonite and hydrated to seal off the subsurface from the ground surface. The injection points were allowed to sit over night before beginning the reinjection process.

Clean water from a tap was used to complete the reinjection process. The water was pumped at varying rates into the subsurface. A totalizer and pressure valve located on the pipe allowed for continuous monitoring of the pumping rate and pressure of the reinjected water. The results of the reinjection test can be found below in Table 7.

**Table 7**  
**Results of Groundwater ReInjection**  
**March 2, 2011**

Injection ID	Pumping Rate	PSI Rate	Gallons Pumped
South Deep	4.5	2.1	Start
	3.1	1.0	25
	3.1	1.6	50
	3.1	1.8	100
South Shallow	6.5	0	Start
	6.5	0	30
**	8.0	0	32
	6.0	1.3	37
	3.0	0.6	40
	2.8	0.4	45
	5.0	1.2	80
	4.0	0.8	120
North Deep	3.2	0.4	Start
	3.2	0.4	35
	5.5	0.4	70
	5.5	0.4	100
	9.5	0.4	125
	9.5	0.4	150
	13.8	0.4	190
	14.0	0.4	225
North Shallow	7.0	0.8	Start
	4.0	0	15
	4.0	0	30
	6.0	0	45
	5.2	0	60
	5.2	0	75

Notes: Pumping Rate is reported gpm.

PSI is pounds per square inch.

\*\* - Pressure resulted in bentonite seal becoming compromised and allowing injected water to flow out onto the ground surface.

As can be seen in Table 7, it appears the shallow and deeper injection points located in the northern section of the North Yard could potentially be used as a reinjection area. A series of injection points would need to be installed to accommodate the anticipated volume of treated water. The pressure did not increase throughout both of the tests and both locations were able to withstand a substantial amount of water without significantly compromising the bentonite seals. A series of injection points and/or injection trenches could be installed in this area to receive the treated groundwater from the system shed. This would also create a recirculation (flushing) effect by reinjecting upgradient of the RW-2 pumping well.

Chambers does have concerns that eventually the reinjection process could slow due to point/trench fouling or the subsurface could become so saturated that no more treated water could be reinjected. This would result in the treatment system being shut down until a new means of disposing the water would be available. There are also extra costs

associated with reinjecting the treated water, such as infrastructure installation and the cost of equipment to pump the water into the subsurface. Due to the outcome of the injection tests, the reinjection of treated groundwater as a viable option is being retained.

The idea of using the on-site secondary containment area as a basin to allow the treated water to seep into the subsurface has also been investigated. A 120' x 40' (58,400 ft<sup>3</sup> or 280,000 gallon) clay lined secondary containment area is located in the northern most portion of the North Yard. The containment area previously held two 100,000 gallon aboveground storage tanks (ASTs). Chambers believes if the bottom of the pit was excavated to remove the clay and make the pit deeper, that this could potentially hold the treated water while it seeps back into the subsurface as well as evaporating during the summer months. The reinjection basin method could also be used as a back-up for the reinjection wells if pressure increases in the points/lines. However, approval from Bolton to use this area as a reinjection basin would need to be obtained. The reinjection basin is being retained as a viable option for the disposal of treated groundwater.

The last option for the disposal of the treated water is to obtain a NPDES permit from the PADEP to allow the treated water to gravity feed into Logan Branch. The PADEP has expressed hesitation to allow a NPDES for Logan Branch due to the stream having a High Quality (HQ) designation. The PADEP did state that it was possible for a NPDES permit to be granted, if all other options were exhausted. The NPDES permit would be the most cost effective and efficient installation of infrastructure to dispose of the treated groundwater. Due to the probable location of the system shed, a PVC pipe could be installed out of the treatment shed to the stream/rip-rap area to allow the water to gravity feed into Logan Branch. Chambers would not anticipate discharge of contaminants to the stream due to the design of the treatment system. An air stripper and the two 500-gallon GACs in succession would allow for adequate monitoring of breakthrough before the water is discharged. Therefore, the NPDES permit is being retained as a viable option.

#### **4.2 Remedial System Configuration**

Chambers is planning on installing two down well groundwater pumps in recovery wells RW-1 (10-inch) and RW-2 (10-inch). Underground lines will be trenched from the recovery wells to a treatment shed located within the North Yard. Once the groundwater is pumped into the shed, it will enter a 50-gpm rated air stripper. The water will then be pumped into two 500-gallon GAC units before being discharged to Logan Branch through a NPDES permit. The PADEP has tentatively agreed to allowing a temporary discharge authorization (TDA) and/or a NPDES permit for the discharge of treated groundwater to Logan Branch. At this time, Chambers is assuming to operate the groundwater extraction and treatment system for a two year time period. Pending the approval and requirements of the permit, it is anticipated monthly Discharge Monitoring Reports (DMR) and

quarterly reports will need to be submitted to the PADEP detailing the progress of remediation at the site.

The installation of the remediation treatment system will be conducted using the following methods and procedures:

- Prior to initiating the treatment, the necessary permits that are required by the PADEP and the United States Environmental Protection Agency (USEPA) will be obtained.
- The correct amperage/voltage will need to be supplied to the site for the operation of the remediation equipment.
- Install piping from the recovery wells to the treatment shed and from the treatment shed to Logan Branch. The trench will need to be at or below the frost line to prevent the freezing of the pipes in the event that the remediation system shuts down during the winter. The line to Logan Branch can be above ground due to the line being gravity fed, which reduces the chance of freezing.
- Install a 40-50 gpm rated air stripper and two 500-gallon GAC units in an enclosed shed to treat the extracted groundwater.
- Chambers is anticipating, through past experiences, that two effluent groundwater samples will need to be obtained to satisfy the discharge permit and reported monthly.
- Chambers will conduct system operation and maintenance visits on the remediation system twice a month to monitor flow rates, collect system samples, and maintain the equipment.

Once the PADEP has approved the North Yard Cleanup Plan, work will begin immediately to remediate the groundwater within the North Yard. Chambers will also present the PADEP with the results of the SPLP test to address the exceedances of COI in the soil samples.

## 5.0 REFERENCES

AQTESOLV™ for Windows. 2005. HydroSOLVE, Inc., Reston, Virginia.

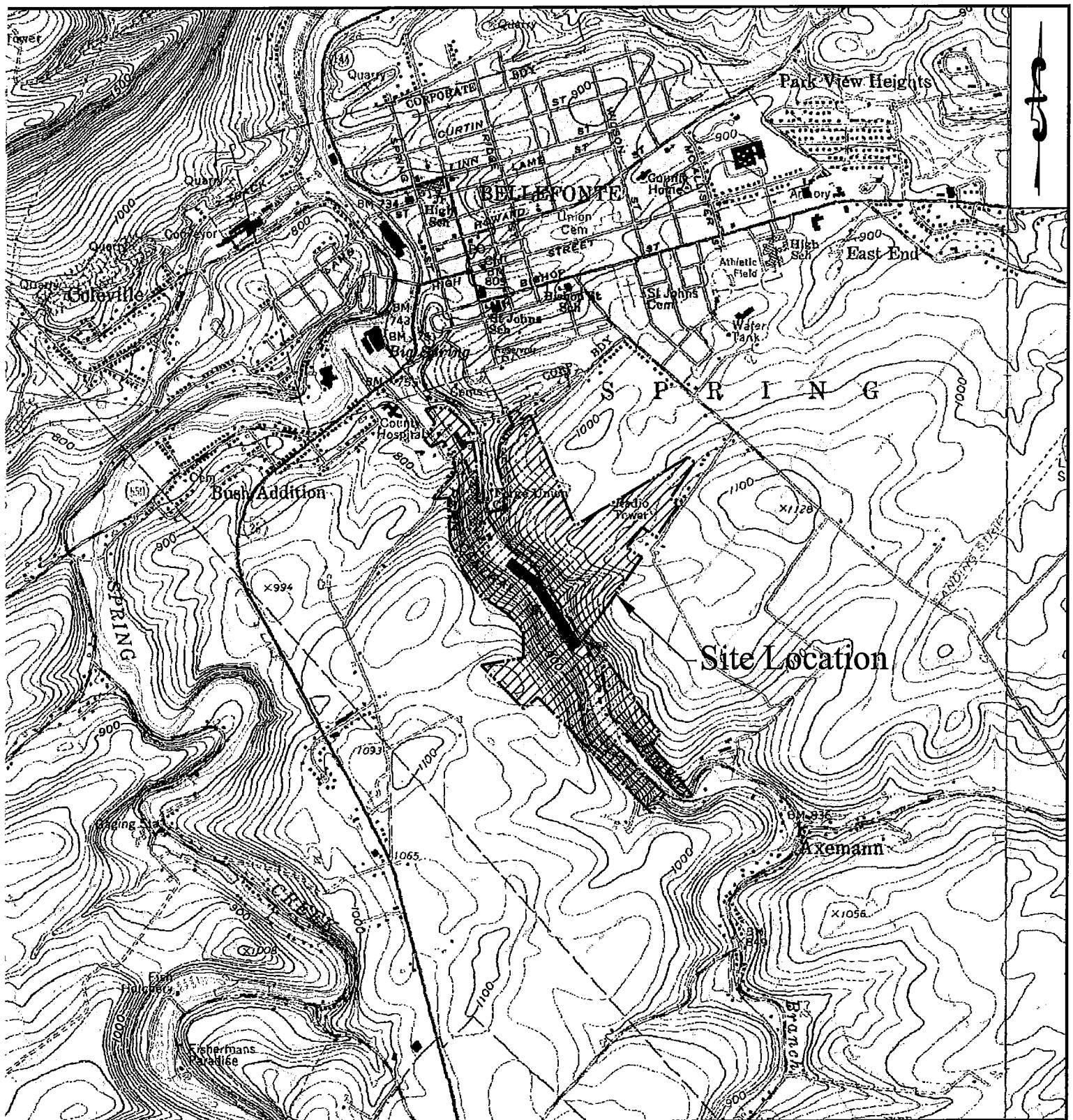
Chambers, 2010. Volume I of II, Remedial Investigation Report, Former Cerro Metal Products Bellefonte Facility, Spring Township, Centre County, Pennsylvania, PADEP Facility ID #14-17981, Chambers Environmental Group, Inc., March 2010.

Freeze, et al., 1979. Groundwater. Freeze, Allen R. and Cherry, John A. Prentice-Hall, Inc.

PA Code, 2001. Pennsylvania Code, Title 25, Environmental Protection, Pennsylvania Department of Environmental Protection, Chapter 250, Administration of Land Recycling Program. November 24, 2001.

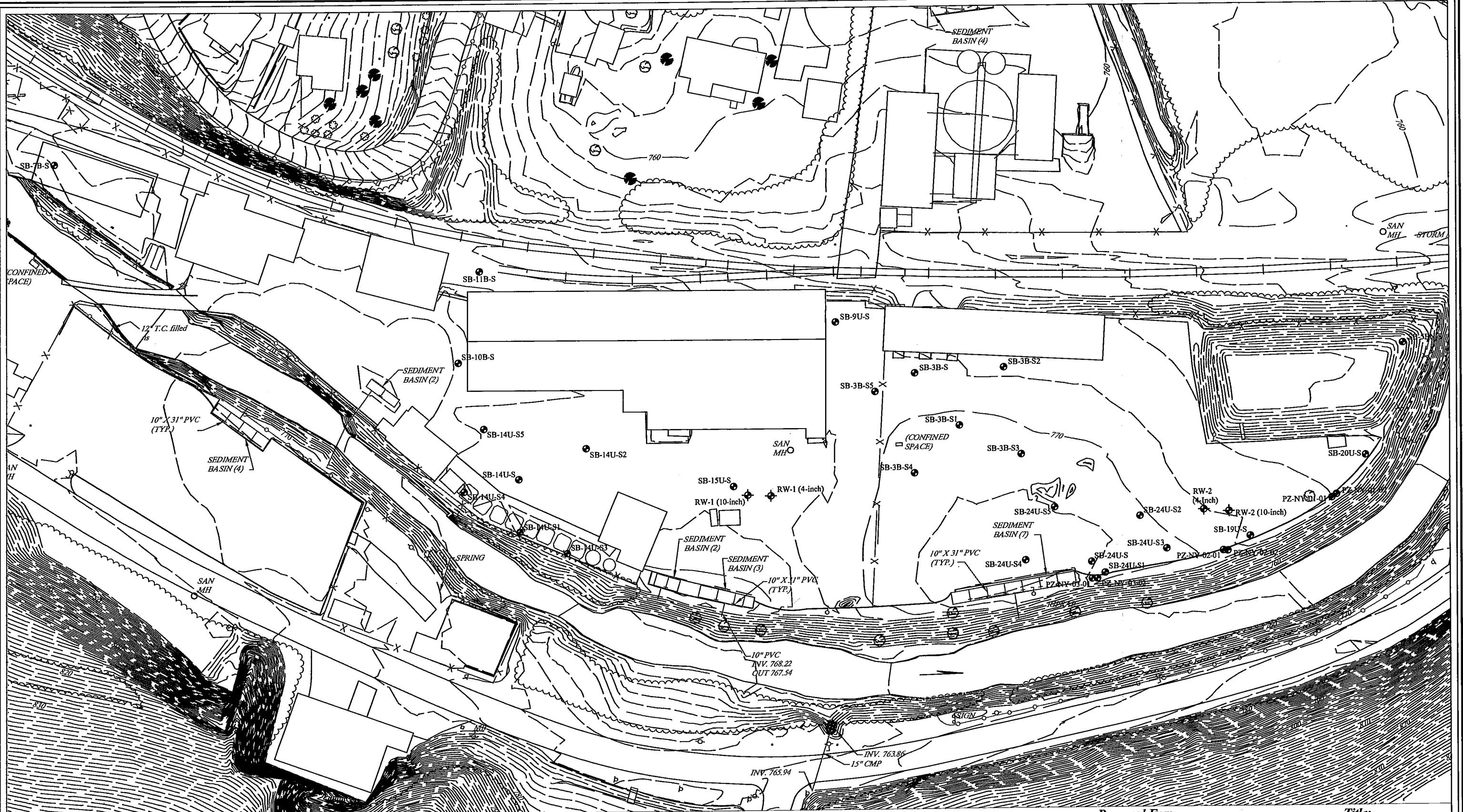
PADEP, 1995. The Land Recycling Program, Land Recycling and Environmental Remediation Standards Act, Act 2. May 19, 1995.

PADEP, 2002. Pennsylvania Department of Environmental Protection. Pennsylvania Land Recycling Program Technical Guidance Manual, V.1. May 2002.



Reference: United States Geological Survey 7.5" Topographic Quadrangle of Bellefonte, Pennsylvania, DeLorme 3-D Topographic Quads program.

<i>Prepared For:</i>	<i>Chambers Project Information:</i>	<i>Prepared By:</i>
The Marmon Group Former Cerro Metal Products 2022 Axemann Road Bellefonte, Pennsylvania 16823	Project Manager: Matthew C. Whitman Project Geologist: Steven J. Treschow, P.G. Chambers Project #08-051699	
<i>Title:</i>	<i>Scale (feet):</i>	
Figure 1 Site Location Map	Scale: 1" = 2000' 0 2000 4000	629 East Rolling Ridge Drive Bellefonte, PA 16823 P: 814-355-2241 F: 814-355-2410 <a href="http://www.chambersenvironmental.com">www.chambersenvironmental.com</a>



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F: 814-355-2410  
[www.chambersenvironmental.com](http://www.chambersenvironmental.com)

Scale:

Scale: 1" = 70'  
0 70 140  
One Inch Equals Seventy Feet

Legend:

- Surface Water Flow Direction
- - Groundwater Monitoring Well
- - Recovery Well
- SB-14U-D
- RW-1

Notes:

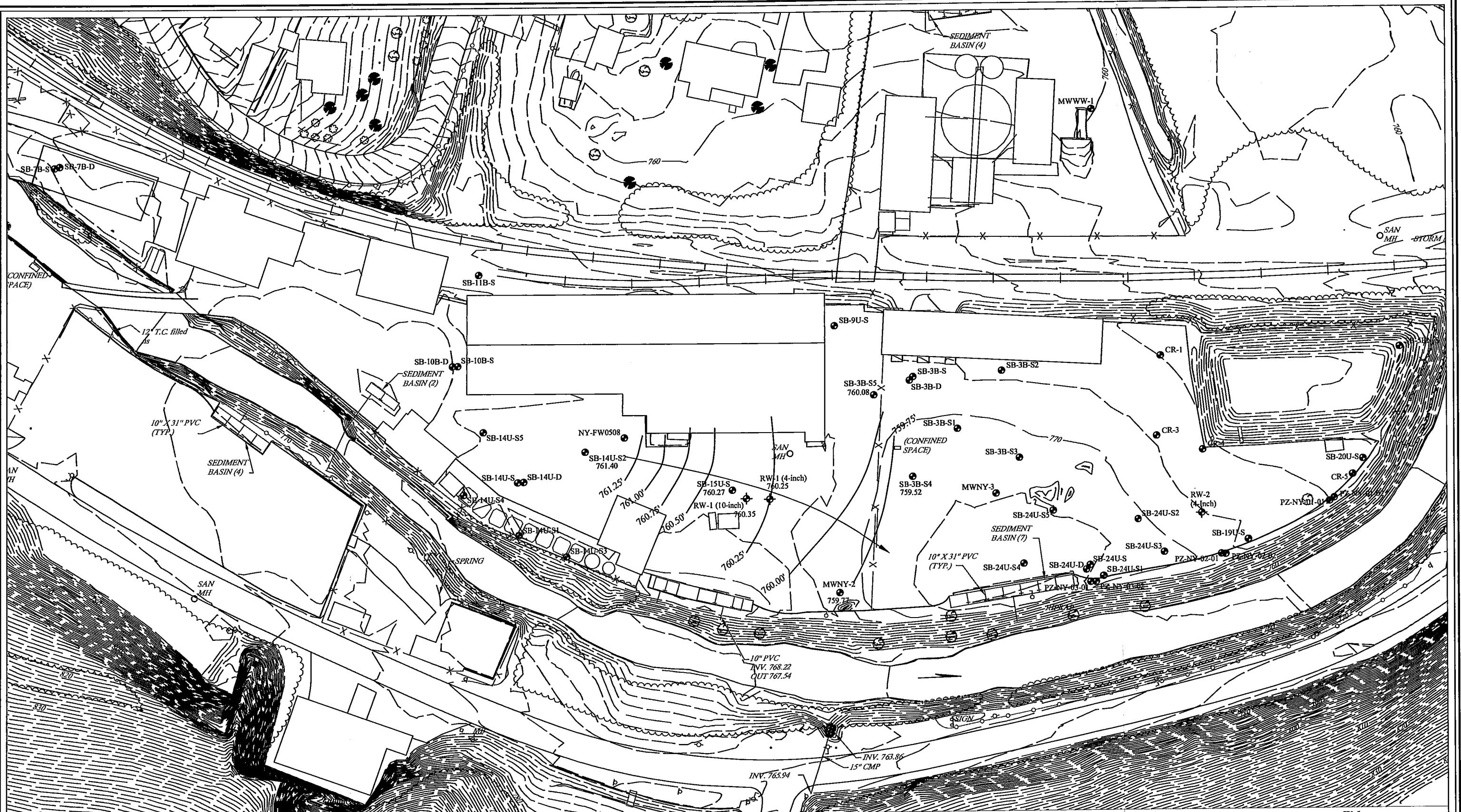
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Prepared For:

The Marmon Group  
Former Cerro Metal Products  
2022 Axemann Road  
Bellefonte, PA 16823

Title:  
**North Yard**

Topographic and  
Groundwater Monitoring Well  
Location Plan  
Figure 2



Prepared by:

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Scale:

Scale: 1" = 70'  
0 70 140  
One Inch Equals Seventy Feet

Legend:

- Surface Water Flow Direction
- Groundwater Monitoring Well
- Recovery Well
- ~ Groundwater Contour
- Groundwater Flow Direction
- SB-14U-D
- RW-1

Notes:

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Prepared For:

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Former Cerro Metal Products  
2022 Axemann Road  
Bellefonte, PA 16823

Title:

North Yard

December 6, 2010

Groundwater Potentiometric  
Contour Map

Figure 3



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Scale:

Scale: 1" = 70'

Legend:

- Surface Water Flow Direction
- Groundwater Monitoring Well
- Recovery Well
- Groundwater Contour
- Groundwater Flow Direction

Notes:

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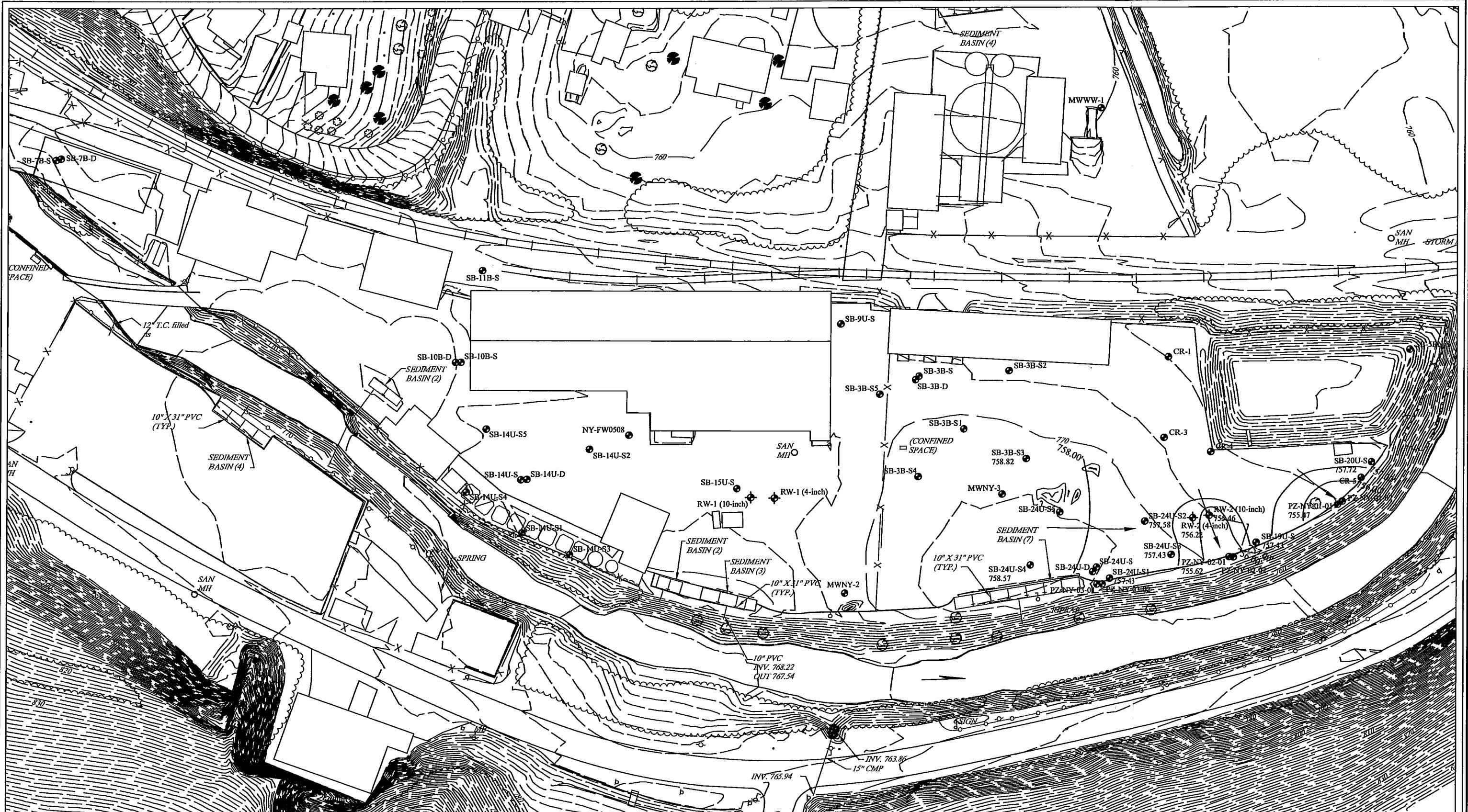
Title:

North Yard

December 9, 2010

Groundwater Potentiometric  
Contour Map - End of Pump Test

Figure 4

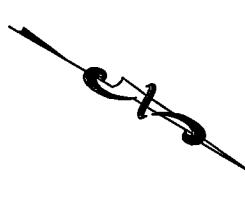


*Prepared by:*

**Scale:**

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Scale: 1" = 70'  
  
 One Inch Equals Seventy Feet



### Legend

- Surface Water Flow Direction
  - (+) - Groundwater Monitoring Well
  - (•) - Recovery Well
  - (~) - Groundwater Contour
  - (→) - Groundwater Flow Direction

CONTOUR INTERVAL: 1'  
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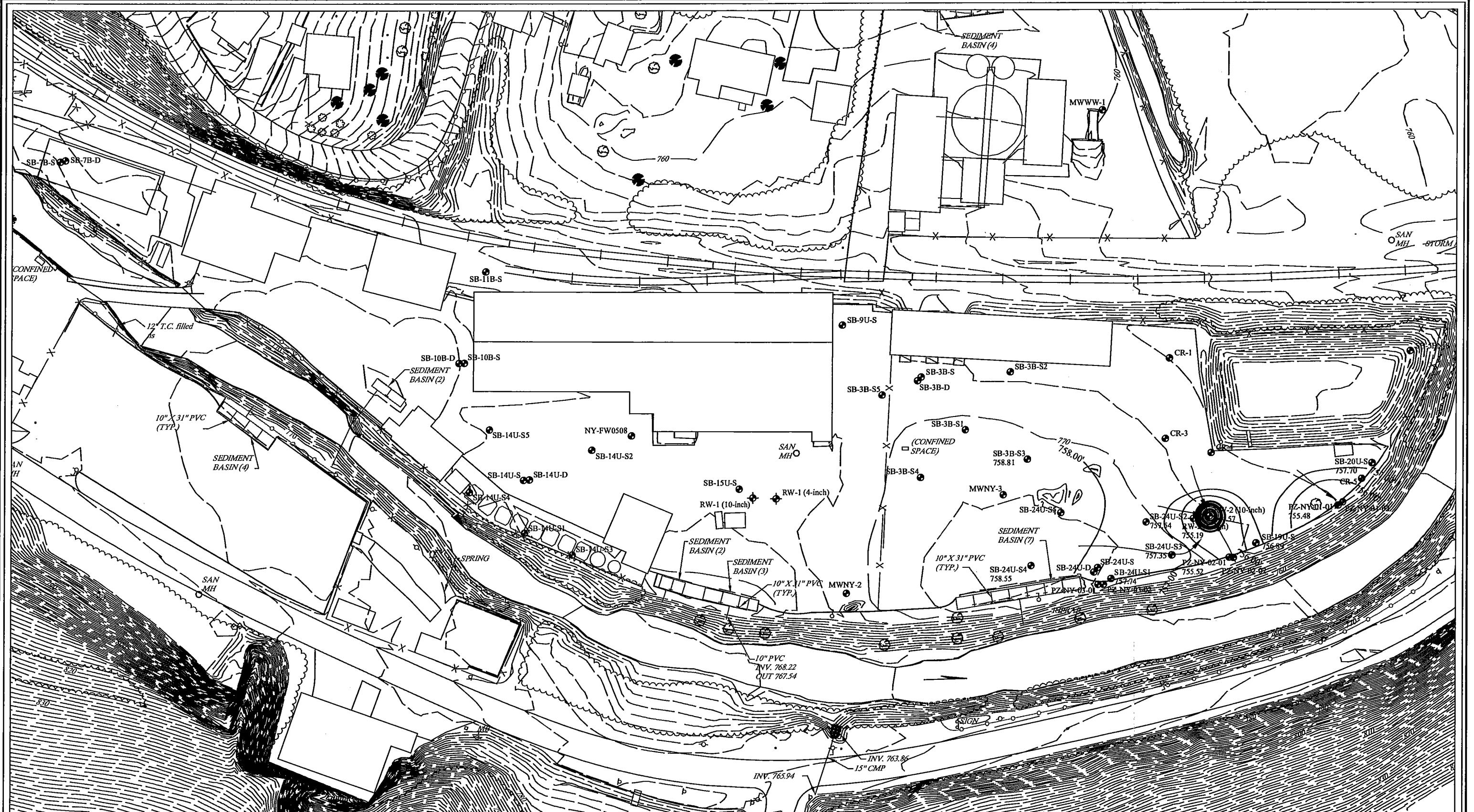
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**Title:**

January 31, 2011

Groundwater Potentiometric Contour Map

Figure 5



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Scale:

Scale: 1" = 70'  
0 70 140  
One Inch Equals Seventy Feet

Legend:

- - Surface Water Flow Direction
- - Groundwater Monitoring Well
- - Recovery Well
- ↔ - Groundwater Contour
- - Groundwater Flow Direction

Notes:

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2022 Axemann Road  
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Title:

**North Yard**  
February 3, 2011  
Groundwater Potentiometric  
Contour Map  
Figure 6



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Scale:

Scale: 1" = 70'  
0 70 140  
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Legend:

- Surface Water Flow Direction
- Groundwater Monitoring Well  
SB-14U-D
- Recovery Well  
RW-1

Notes:

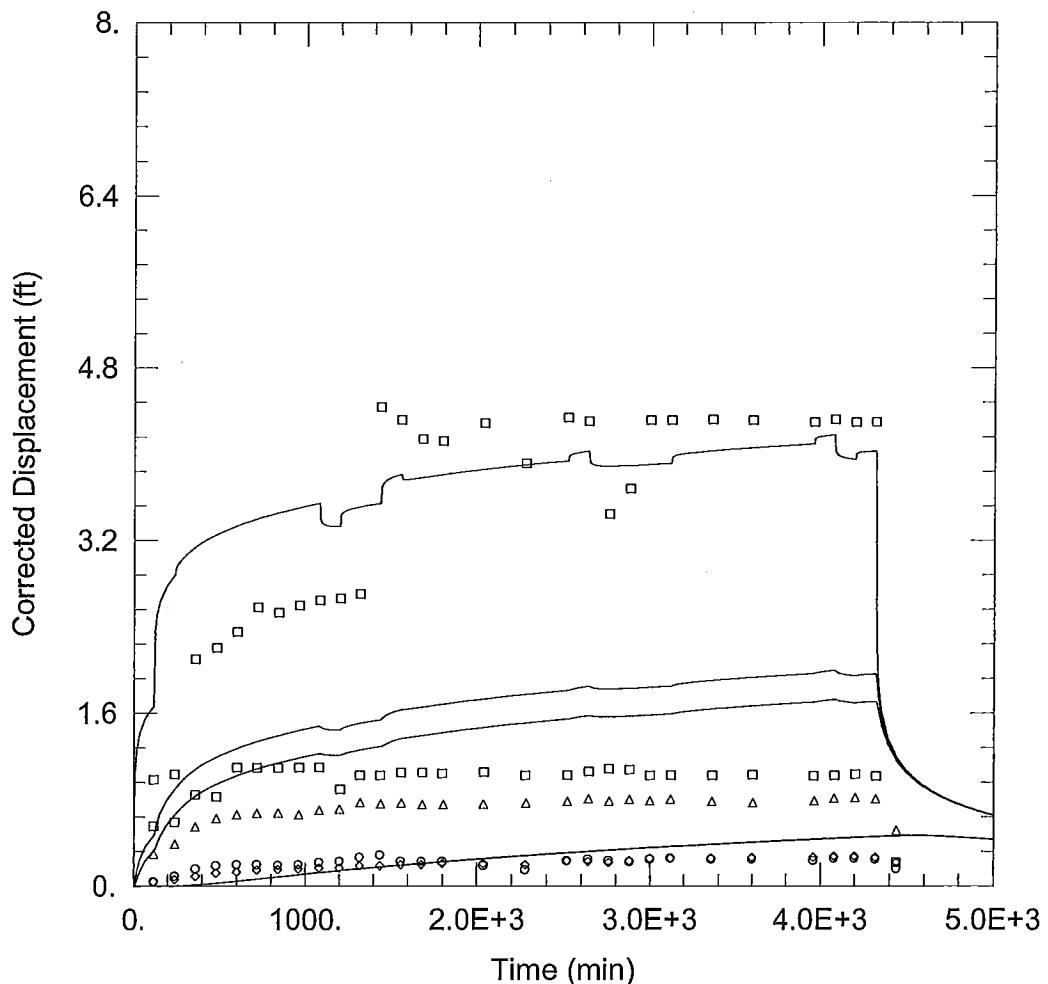
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Former Cerro Metal Products  
2022 Axemann Road  
Bellefonte, PA 16823

Title:

North Yard  
Potential Reinjection and/or  
NPDES Discharge Locations  
Figure 7



#### WELL TEST ANALYSIS

Data Set: P:\...\North Yard RW-1 - 10-inch.aqt

Date: 04/05/11

Time: 11:10:15

#### PROJECT INFORMATION

Company: Cerro Metals

Client: Marmon Group

Project: 08-061710

Location: Bellefonte, PA

Test Well: RW-1 (10-inch)

Test Date: December 6, 2010

#### WELL DATA

##### Pumping Wells

Well Name	X (ft)	Y (ft)
RW-1 (10-inch)	4064.27	9311.57

##### Observation Wells

Well Name	X (ft)	Y (ft)
□ RW-1 (10-inch)	4064.27	9311.57
□ SB-15U-S	4064.27	9299.8
△ RW-1 (4-inch)	4054.91	9326.28
◇ SB-14U-S2	4100.04	9190.8
○ SB-3B-S4	3983.47	9406.75

#### SOLUTION

Aquifer Model: Unconfined

T = 8.554 cm<sup>2</sup>/sec

Kz/Kr = 1.

Solution Method: Theis

S = 0.1

b = 9.15 ft

# AQTESOLV for Windows

Data Set: P:\2000 PROJECTS\2008\08-061710 - North Yard Remediation Task 20\Pump Test\North Yard RW-1  
Date: 04/05/11  
Time: 11:10:27

## PROJECT INFORMATION

Company: Cerro Metals  
Client: Marmon Group  
Project: 08-061710  
Location: Bellefonte, PA  
Test Date: December 6, 2010  
Test Well: RW-1 (10-inch)

## AQUIFER DATA

Saturated Thickness: 9.15 ft  
Anisotropy Ratio (Kz/Kr): 1.

## PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: RW-1 (10-inch)

X Location: 4064.27 ft  
Y Location: 9311.57 ft

Casing Radius: 0.406 ft  
Well Radius: 0.5 ft

Fully Penetrating Well

No. of pumping periods: 38

Pumping Period Data			
Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
1.	1.33	2280.	2.34
120.	2.2	2408.	2.34
240.	2.27	2520.	2.4
360.	2.27	2640.	2.27
480.	2.27	2760.	2.27
600.	2.27	2880.	2.27
720.	2.27	3000.	2.27
840.	2.27	3120.	2.34
960.	2.27	3240.	2.34
1080.	2.07	3360.	2.34
1200.	2.205	3480.	2.34
1320.	2.205	3600.	2.34
1440.	2.4	3720.	2.34
1560.	2.34	3840.	2.34
1680.	2.34	3960.	2.4
1800.	2.34	4080.	2.205
1920.	2.34	4200.	2.27
2040.	2.34	4319.	2.205
2160.	2.34	4320.	0.

## OBSERVATION WELL DATA

No. of observation wells: 5

Observation Well No. 1: RW-1 (10-inch)

X Location: 4064.27 ft  
Y Location: 9311.57 ft

Radial distance from RW-1 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 29

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	1.04	2040.	6.86
240.	1.1	2280.	5.68
360.	2.42	2520.	7.07
480.	2.56	2640.	6.93
600.	2.77	2760.	4.6
720.	3.1	2880.	5.1
840.	3.03	3000.	6.97
960.	3.13	3120.	6.97
1080.	3.2	3360.	7.
1200.	3.23	3600.	6.97
1320.	3.29	3960.	6.9
1440.	7.56	4080.	6.98
1560.	6.98	4200.	6.9
1680.	6.33	4320.	6.9
1800.	6.27		

Observation Well No. 2: SB-15U-S

X Location: 4064.27 ft

Y Location: 9299.8 ft

Radial distance from RW-1 (10-inch): 11.77 ft

Fully Penetrating Well

No. of Observations: 30

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	0.57	2040.	1.12
240.	0.61	2280.	1.09
360.	0.89	2520.	1.09
480.	0.87	2640.	1.13
600.	1.17	2760.	1.16
720.	1.17	2880.	1.15
840.	1.17	3000.	1.09
960.	1.17	3120.	1.09
1080.	1.17	3360.	1.09
1200.	0.94	3600.	1.09
1320.	1.09	3960.	1.08
1440.	1.09	4080.	1.09
1560.	1.12	4200.	1.1
1680.	1.12	4320.	1.08
1800.	1.11	4440.	0.22

Observation Well No. 3: RW-1 (4-inch)

X Location: 4054.91 ft

Y Location: 9326.28 ft

Radial distance from RW-1 (10-inch): 17.43541511 ft

Fully Penetrating Well

No. of Observations: 30

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	0.3	2040.	0.79
240.	0.4	2280.	0.8
360.	0.57	2520.	0.82
480.	0.65	2640.	0.85
600.	0.69	2760.	0.82

AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
720.	0.7	2880.	0.84
840.	0.7	3000.	0.83
960.	0.69	3120.	0.84
1080.	0.74	3360.	0.82
1200.	0.74	3600.	0.81
1320.	0.81	3960.	0.83
1440.	0.8	4080.	0.85
1560.	0.8	4200.	0.86
1680.	0.79	4320.	0.85
1800.	0.79	4440.	0.53

Observation Well No. 4: SB-14U-S2

X Location: 4100.04 ft

Y Location: 9190.8 ft

Radial distance from RW-1 (10-inch): 125.9558883 ft

Fully Penetrating Well

No. of Observations: 30

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	0.04	2040.	0.21
240.	0.06	2280.	0.2
360.	0.09	2520.	0.23
480.	0.12	2640.	0.23
600.	0.13	2760.	0.22
720.	0.15	2880.	0.24
840.	0.16	3000.	0.26
960.	0.16	3120.	0.26
1080.	0.17	3360.	0.26
1200.	0.17	3600.	0.27
1320.	0.19	3960.	0.27
1440.	0.19	4080.	0.28
1560.	0.2	4200.	0.28
1680.	0.2	4320.	0.27
1800.	0.21	4440.	0.22

Observation Well No. 5: SB-3B-S4

X Location: 3983.47 ft

Y Location: 9406.75 ft

Radial distance from RW-1 (10-inch): 124.8514013 ft

Fully Penetrating Well

No. of Observations: 30

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	0.04	2040.	0.19
240.	0.09	2280.	0.15
360.	0.16	2520.	0.24
480.	0.19	2640.	0.25
600.	0.2	2760.	0.24
720.	0.2	2880.	0.23
840.	0.2	3000.	0.25
960.	0.2	3120.	0.26
1080.	0.22	3360.	0.25
1200.	0.23	3600.	0.25
1320.	0.27	3960.	0.24
1440.	0.29	4080.	0.26
1560.	0.23	4200.	0.26
1680.	0.23	4320.	0.25

# AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1800.	0.23	4440.	0.16

## SOLUTION

Pumping Test

Aquifer Model: Unconfined

Solution Method: Theis

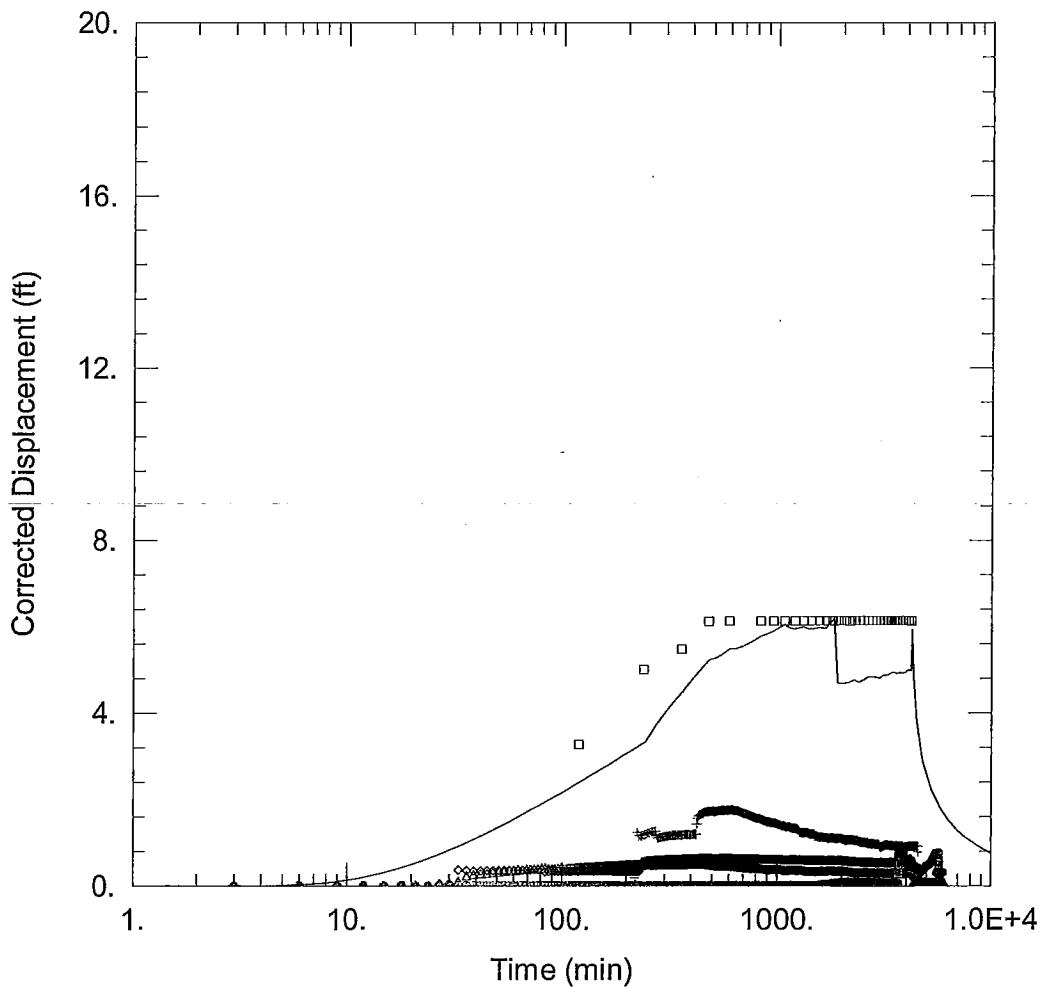
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	Unit
T	8.554	cm <sup>2</sup> /sec
S	0.1	
Kz/Kr	1.	
b	9.15	ft

$$K = T/b = 0.03067 \text{ cm/sec}$$

$$S_s = S/b = 0.01093 \text{ 1/ft}$$



#### WELL TEST ANALYSIS

Data Set: P:\...\North Yard RW-2 10-inch.agt

Date: 04/05/11

Time: 11:10:42

#### PROJECT INFORMATION

Company: Cerro Metals

Client: Marmon Group

Project: 08-061710

Location: Bellefonte, PA

Test Well: RW-2 (10-inch)

Test Date: January 31, 2011

#### WELL DATA

##### Pumping Wells

Well Name	X (ft)	Y (ft)
RW-2 (10-inch)	0	0

##### Observation Wells

Well Name	X (ft)	Y (ft)
□ RW-2 (10-inch)	0	0
+ RW-2 (4-inch)	0	0
△ SB-19U-S	0	0
◊ PZ-NY-02-01	0	0
○ SB-24U-S1	0	0

#### SOLUTION

Aquifer Model: Unconfined

T = 2.3 cm<sup>2</sup>/sec

Kz/Kr = 1.

Solution Method: Theis

S = 33.42

b = 12.47 ft

# AQTESOLV for Windows

Data Set: P:\2000 PROJECTS\2008\08-061710 - North Yard Remediation Task 20\Pump Test\North Yard RW-2  
Date: 04/05/11  
Time: 11:10:54

## PROJECT INFORMATION

Company: Cerro Metals  
Client: Marmon Group  
Project: 08-061710  
Location: Bellefonte, PA  
Test Date: January 31, 2011  
Test Well: RW-2 (10-inch)

## AQUIFER DATA

Saturated Thickness: 12.47 ft  
Anisotropy Ratio (Kz/Kr): 1.

## PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: RW-2 (10-inch)

X Location: 0. ft  
Y Location: 0. ft

Casing Radius: 0.406 ft  
Well Radius: 0.5 ft

Fully Penetrating Well

No. of pumping periods: 36

Pumping Period Data			
Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
1.	2.67	2280.	2.41
120.	2.67	2400.	2.54
240.	3.34	2520.	2.61
360.	3.47	2640.	2.54
480.	3.21	2760.	2.47
600.	3.01	2880.	2.41
840.	2.94	3000.	2.54
960.	2.94	3120.	2.47
1080.	2.67	3240.	2.54
1200.	2.67	3360.	2.54
1320.	2.54	3480.	2.41
1440.	2.54	3600.	2.47
1560.	2.47	3720.	2.41
1680.	2.61	3840.	2.41
1800.	2.67	3960.	2.54
1920.	2.54	4080.	2.41
2040.	2.54	4200.	2.41
2160.	2.61	4201.	0.

## OBSERVATION WELL DATA

No. of observation wells: 5

Observation Well No. 1: RW-2 (10-inch)

X Location: 0. ft  
Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

# AQTESOLV for Windows

Data Set: P:\2000 PROJECTS\2008\08-061710 - North Yard Remediation Task 20\Pump Test\North Yard RW-2  
Date: 04/05/11  
Time: 11:10:54

## PROJECT INFORMATION

Company: Cerro Metals  
Client: Marmon Group  
Project: 08-061710  
Location: Bellefonte, PA  
Test Date: January 31, 2011  
Test Well: RW-2 (10-inch)

## AQUIFER DATA

Saturated Thickness: 12.47 ft  
Anisotropy Ratio (Kz/Kr): 1.

## PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: RW-2 (10-inch)

X Location: 0. ft  
Y Location: 0. ft

Casing Radius: 0.406 ft  
Well Radius: 0.5 ft

Fully Penetrating Well

No. of pumping periods: 36

Pumping Period Data			
Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
1.	2.67	2280.	2.41
120.	2.67	2400.	2.54
240.	3.34	2520.	2.61
360.	3.47	2640.	2.54
480.	3.21	2760.	2.47
600.	3.01	2880.	2.41
840.	2.94	3000.	2.54
960.	2.94	3120.	2.47
1080.	2.67	3240.	2.54
1200.	2.67	3360.	2.54
1320.	2.54	3480.	2.41
1440.	2.54	3600.	2.47
1560.	2.47	3720.	2.41
1680.	2.61	3840.	2.41
1800.	2.67	3960.	2.54
1920.	2.54	4080.	2.41
2040.	2.54	4200.	2.41
2160.	2.61	4201.	0.

## OBSERVATION WELL DATA

No. of observation wells: 5

Observation Well No. 1: RW-2 (10-inch)

X Location: 0. ft  
Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 34

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
120.	3.87	2280.	10.91
240.	6.93	2400.	10.9
360.	8.13	2520.	10.91
480.	10.78	2640.	10.93
600.	10.83	2760.	10.92
840.	10.85	2880.	10.91
960.	10.85	3000.	10.91
1080.	10.85	3120.	10.89
1200.	10.85	3240.	10.9
1320.	10.93	3360.	10.92
1440.	10.92	3480.	10.89
1560.	10.91	3600.	10.93
1680.	10.93	3720.	10.91
1800.	10.92	3840.	10.92
1920.	10.91	3960.	10.88
2040.	10.9	4080.	10.89
2160.	10.78	4200.	10.84

Observation Well No. 2: RW-2 (4-inch)

X Location: 0. ft

Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 2000

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.	0.005	3003.	0.971
6.	0.006	3006.	0.96
9.	0.006	3009.	0.957
12.	0.003	3012.	0.944
15.	0.004	3015.	0.942
18.	0.004	3018.	0.935
21.	0.003	3021.	0.937
24.	0.003	3024.	0.936
27.	0.005	3027.	0.936
30.	0.003	3030.	0.935
33.	0.003	3033.	0.937
36.	0.003	3036.	0.936
39.	0.003	3039.	0.938
42.	0.	3042.	0.932
45.	0.001	3045.	0.934
48.	0.001	3048.	0.933
51.	0.002	3051.	0.93
54.	0.002	3054.	0.932
57.	0.001	3057.	0.928
60.	0.001	3060.	0.927
63.	0.004	3063.	0.929
66.	0.003	3066.	0.931
69.	0.003	3069.	0.936
72.	0.003	3072.	0.94
75.	0.002	3075.	0.946
78.	0.005	3078.	0.951
81.	0.005	3081.	0.954
84.	0.004	3084.	0.956
87.	0.002	3087.	0.96
90.	0.003	3090.	0.954
93.	0.004	3093.	0.953
96.	0.003	3096.	0.956
99.	0.005	3099.	0.956

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
102.	0.003	3102.	0.954
105.	0.001	3105.	0.952
108.	0.003	3108.	0.957
111.	0.003	3111.	0.958
114.	0.003	3114.	0.957
117.	0.004	3117.	0.954
120.	0.005	3120.	0.961
123.	0.004	3123.	0.965
126.	0.006	3126.	0.965
129.	0.006	3129.	0.966
132.	0.005	3132.	0.965
135.	0.007	3135.	0.966
138.	0.005	3138.	0.965
141.	0.007	3141.	0.973
144.	0.008	3144.	0.974
147.	0.007	3147.	0.973
150.	0.007	3150.	0.971
153.	0.008	3153.	0.975
156.	0.009	3156.	0.972
159.	0.008	3159.	0.977
162.	0.008	3162.	0.978
165.	0.008	3165.	0.972
168.	0.009	3168.	0.975
171.	0.009	3171.	0.977
174.	0.009	3174.	0.976
177.	0.008	3177.	0.979
180.	0.008	3180.	0.98
183.	0.011	3183.	0.979
186.	0.01	3186.	0.981
189.	0.008	3189.	0.981
192.	0.008	3192.	0.981
195.	0.007	3195.	0.983
198.	0.009	3198.	0.986
201.	0.008	3201.	0.984
204.	0.008	3204.	0.977
207.	0.01	3207.	0.981
210.	0.009	3210.	0.98
213.	0.007	3213.	0.982
216.	0.008	3216.	0.978
219.	0.193	3219.	0.982
222.	0.055	3222.	0.99
225.	1.299	3225.	0.989
228.	1.227	3228.	0.987
231.	1.215	3231.	0.982
234.	1.22	3234.	0.985
237.	1.224	3237.	0.984
240.	1.235	3240.	0.988
243.	1.251	3243.	0.985
246.	1.262	3246.	0.983
249.	1.273	3249.	0.988
252.	1.281	3252.	0.982
255.	1.292	3255.	0.981
258.	1.3	3258.	0.981
261.	1.309	3261.	0.982
264.	1.315	3264.	0.984
267.	1.325	3267.	0.98
270.	1.329	3270.	0.981
273.	1.338	3273.	0.981
276.	1.215	3276.	0.986
279.	1.16	3279.	0.982
282.	1.174	3282.	0.982
285.	1.179	3285.	0.985
288.	1.184	3288.	0.985
291.	1.187	3291.	0.986
294.	1.189	3294.	0.982
297.	1.196	3297.	0.983
300.	1.199	3300.	0.98

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
303.	1.202	3303.	0.977
306.	1.208	3306.	0.976
309.	1.21	3309.	0.977
312.	1.214	3312.	0.973
315.	1.217	3315.	0.977
318.	1.22	3318.	0.976
321.	1.219	3321.	0.972
324.	1.224	3324.	0.974
327.	1.226	3327.	0.971
330.	1.23	3330.	0.976
333.	1.232	3333.	0.971
336.	1.233	3336.	0.971
339.	1.236	3339.	0.965
342.	1.236	3342.	0.968
345.	1.239	3345.	0.968
348.	1.238	3348.	0.976
351.	1.24	3351.	0.971
354.	1.24	3354.	0.973
357.	1.241	3357.	0.973
360.	1.243	3360.	0.977
363.	1.243	3363.	0.974
366.	1.243	3366.	0.97
369.	1.247	3369.	0.964
372.	1.248	3372.	0.967
375.	1.25	3375.	0.963
378.	1.248	3378.	0.964
381.	1.249	3381.	0.964
384.	1.249	3384.	0.959
387.	1.251	3387.	0.969
390.	1.249	3390.	0.965
393.	1.251	3393.	0.971
396.	1.253	3396.	0.965
399.	1.252	3399.	0.965
402.	1.25	3402.	0.966
405.	1.251	3405.	0.97
408.	1.255	3408.	0.966
411.	1.257	3411.	0.964
414.	1.259	3414.	0.965
417.	1.258	3417.	0.961
420.	1.258	3420.	0.964
423.	1.262	3423.	0.97
426.	1.531	3426.	0.968
429.	1.682	3429.	0.967
432.	1.733	3432.	0.964
435.	1.754	3435.	0.968
438.	1.769	3438.	0.966
441.	1.779	3441.	0.971
444.	1.788	3444.	0.971
447.	1.793	3447.	0.968
450.	1.802	3450.	0.964
453.	1.802	3453.	0.964
456.	1.814	3456.	0.963
459.	1.828	3459.	0.964
462.	1.841	3462.	0.965
465.	1.847	3465.	0.966
468.	1.847	3468.	0.963
471.	1.851	3471.	0.966
474.	1.852	3474.	0.968
477.	1.857	3477.	0.963
480.	1.86	3480.	0.962
483.	1.863	3483.	0.965
486.	1.862	3486.	0.964
489.	1.862	3489.	0.964
492.	1.86	3492.	0.967
495.	1.863	3495.	0.965
498.	1.866	3498.	0.963
501.	1.866	3501.	0.957

## AQTESOLV for Windows

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
504.	1.867	3504.	0.957
507.	1.865	3507.	0.957
510.	1.855	3510.	0.959
513.	1.855	3513.	0.959
516.	1.857	3516.	0.959
519.	1.857	3519.	0.96
522.	1.861	3522.	0.958
525.	1.87	3525.	0.961
528.	1.871	3528.	0.955
531.	1.875	3531.	0.955
534.	1.876	3534.	0.952
537.	1.881	3537.	0.955
540.	1.881	3540.	0.954
543.	1.881	3543.	0.954
546.	1.884	3546.	0.961
549.	1.882	3549.	0.958
552.	1.887	3552.	0.96
555.	1.889	3555.	0.959
558.	1.892	3558.	0.958
561.	1.893	3561.	0.959
564.	1.892	3564.	0.964
567.	1.892	3567.	0.962
570.	1.891	3570.	0.964
573.	1.894	3573.	0.965
576.	1.891	3576.	0.97
579.	1.894	3579.	0.968
582.	1.894	3582.	0.969
585.	1.894	3585.	0.967
588.	1.896	3588.	0.965
591.	1.893	3591.	0.97
594.	1.897	3594.	0.968
597.	1.899	3597.	0.965
600.	1.898	3600.	0.967
603.	1.898	3603.	0.965
606.	1.902	3606.	0.967
609.	1.902	3609.	0.962
612.	1.897	3612.	0.959
615.	1.901	3615.	0.96
618.	1.901	3618.	0.967
621.	1.9	3621.	0.966
624.	1.903	3624.	0.966
627.	1.904	3627.	0.961
630.	1.9	3630.	0.959
633.	1.893	3633.	0.961
636.	1.892	3636.	0.957
639.	1.893	3639.	0.958
642.	1.891	3642.	0.962
645.	1.889	3645.	0.961
648.	1.886	3648.	0.961
651.	1.883	3651.	0.959
654.	1.882	3654.	0.96
657.	1.883	3657.	0.962
660.	1.879	3660.	0.959
663.	1.878	3663.	0.955
666.	1.875	3666.	0.96
669.	1.875	3669.	0.956
672.	1.871	3672.	0.952
675.	1.866	3675.	0.957
678.	1.861	3678.	0.957
681.	1.857	3681.	0.955
684.	1.85	3684.	0.955
687.	1.847	3687.	0.957
690.	1.842	3690.	0.96
693.	1.837	3693.	0.961
696.	1.835	3696.	0.957
699.	1.829	3699.	0.961
702.	1.82	3702.	0.96

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
705.	1.816	3705.	0.962
708.	1.813	3708.	0.962
711.	1.807	3711.	0.963
714.	1.8	3714.	0.961
717.	1.796	3717.	0.956
720.	1.799	3720.	0.96
723.	1.792	3723.	0.955
726.	1.786	3726.	0.953
729.	1.784	3729.	0.955
732.	1.781	3732.	0.956
735.	1.772	3735.	0.955
738.	1.765	3738.	0.959
741.	1.759	3741.	0.954
744.	1.756	3744.	0.949
747.	1.754	3747.	0.951
750.	1.746	3750.	0.953
753.	1.743	3753.	0.956
756.	1.744	3756.	0.96
759.	1.737	3759.	0.96
762.	1.734	3762.	0.958
765.	1.732	3765.	0.957
768.	1.727	3768.	0.955
771.	1.725	3771.	0.959
774.	1.724	3774.	0.956
777.	1.718	3777.	0.963
780.	1.714	3780.	0.961
783.	1.711	3783.	0.964
786.	1.706	3786.	0.963
789.	1.709	3789.	0.962
792.	1.706	3792.	0.964
795.	1.702	3795.	0.965
798.	1.701	3798.	0.964
801.	1.694	3801.	0.964
804.	1.692	3804.	0.97
807.	1.689	3807.	0.963
810.	1.687	3810.	0.961
813.	1.681	3813.	0.959
816.	1.684	3816.	0.96
819.	1.682	3819.	0.963
822.	1.68	3822.	0.962
825.	1.673	3825.	0.951
828.	1.67	3828.	0.943
831.	1.667	3831.	0.945
834.	1.66	3834.	0.947
837.	1.661	3837.	0.947
840.	1.655	3840.	0.943
843.	1.645	3843.	0.946
846.	1.645	3846.	0.943
849.	1.642	3849.	0.949
852.	1.64	3852.	0.948
855.	1.639	3855.	0.949
858.	1.634	3858.	0.948
861.	1.63	3861.	0.95
864.	1.631	3864.	0.949
867.	1.626	3867.	0.948
870.	1.625	3870.	0.956
873.	1.62	3873.	0.955
876.	1.623	3876.	0.958
879.	1.619	3879.	0.952
882.	1.615	3882.	0.952
885.	1.615	3885.	0.952
888.	1.61	3888.	0.953
891.	1.609	3891.	0.952
894.	1.602	3894.	0.945
897.	1.598	3897.	0.932
900.	1.597	3900.	0.928
903.	1.588	3903.	0.926

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
906.	1.593	3906.	0.922
909.	1.587	3909.	0.92
912.	1.585	3912.	0.921
915.	1.584	3915.	0.924
918.	1.581	3918.	0.922
921.	1.577	3921.	0.921
924.	1.578	3924.	0.92
927.	1.57	3927.	0.92
930.	1.571	3930.	0.923
933.	1.568	3933.	0.926
936.	1.568	3936.	0.926
939.	1.566	3939.	0.93
942.	1.564	3942.	0.931
945.	1.562	3945.	0.928
948.	1.56	3948.	0.93
951.	1.559	3951.	0.929
954.	1.561	3954.	0.933
957.	1.56	3957.	0.93
960.	1.558	3960.	0.942
963.	1.557	3963.	0.938
966.	1.553	3966.	0.94
969.	1.55	3969.	0.94
972.	1.552	3972.	0.94
975.	1.55	3975.	0.939
978.	1.55	3978.	0.933
981.	1.548	3981.	0.935
984.	1.542	3984.	0.937
987.	1.539	3987.	0.934
990.	1.538	3990.	0.931
993.	1.542	3993.	0.932
996.	1.54	3996.	0.936
999.	1.538	3999.	0.934
1002.	1.533	4002.	0.932
1005.	1.534	4005.	0.934
1008.	1.531	4008.	0.936
1011.	1.53	4011.	0.938
1014.	1.53	4014.	0.94
1017.	1.525	4017.	0.938
1020.	1.522	4020.	0.937
1023.	1.519	4023.	0.938
1026.	1.516	4026.	0.94
1029.	1.512	4029.	0.937
1032.	1.512	4032.	0.938
1035.	1.512	4035.	0.947
1038.	1.505	4038.	0.944
1041.	1.5	4041.	0.941
1044.	1.501	4044.	0.938
1047.	1.495	4047.	0.94
1050.	1.494	4050.	0.942
1053.	1.493	4053.	0.938
1056.	1.482	4056.	0.943
1059.	1.479	4059.	0.946
1062.	1.476	4062.	0.946
1065.	1.474	4065.	0.944
1068.	1.473	4068.	0.947
1071.	1.47	4071.	0.95
1074.	1.467	4074.	0.947
1077.	1.478	4077.	0.948
1080.	1.47	4080.	0.965
1083.	1.474	4083.	0.959
1086.	1.471	4086.	0.951
1089.	1.467	4089.	0.946
1092.	1.466	4092.	0.944
1095.	1.467	4095.	0.943
1098.	1.464	4098.	0.95
1101.	1.462	4101.	0.947
1104.	1.46	4104.	0.947

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1107.	1.452	4107.	0.95
1110.	1.447	4110.	0.955
1113.	1.449	4113.	0.949
1116.	1.449	4116.	0.948
1119.	1.451	4119.	0.95
1122.	1.448	4122.	0.951
1125.	1.449	4125.	0.953
1128.	1.448	4128.	0.949
1131.	1.449	4131.	0.95
1134.	1.445	4134.	0.954
1137.	1.453	4137.	0.951
1140.	1.448	4140.	0.953
1143.	1.441	4143.	0.954
1146.	1.44	4146.	0.953
1149.	1.439	4149.	0.949
1152.	1.435	4152.	0.946
1155.	1.437	4155.	0.945
1158.	1.434	4158.	0.944
1161.	1.432	4161.	0.938
1164.	1.433	4164.	0.933
1167.	1.429	4167.	0.934
1170.	1.423	4170.	0.944
1173.	1.42	4173.	0.96
1176.	1.424	4176.	0.957
1179.	1.422	4179.	0.955
1182.	1.417	4182.	0.96
1185.	1.415	4185.	0.958
1188.	1.417	4188.	0.965
1191.	1.419	4191.	0.964
1194.	1.411	4194.	0.959
1197.	1.415	4197.	0.957
1200.	1.413	4200.	0.964
1203.	1.41	4203.	0.96
1206.	1.412	4206.	0.959
1209.	1.412	4209.	0.962
1212.	1.409	4212.	0.964
1215.	1.407	4215.	0.964
1218.	1.407	4218.	0.963
1221.	1.409	4221.	0.964
1224.	1.402	4224.	0.961
1227.	1.409	4227.	0.962
1230.	1.405	4230.	0.962
1233.	1.402	4233.	0.967
1236.	1.4	4236.	0.967
1239.	1.39	4239.	0.97
1242.	1.382	4242.	0.967
1245.	1.386	4245.	0.959
1248.	1.385	4248.	0.952
1251.	1.378	4251.	0.962
1254.	1.377	4254.	0.962
1257.	1.371	4257.	0.963
1260.	1.373	4260.	0.961
1263.	1.365	4263.	0.959
1266.	1.352	4266.	0.959
1269.	1.343	4269.	0.96
1272.	1.334	4272.	0.956
1275.	1.323	4275.	0.959
1278.	1.32	4278.	0.955
1281.	1.323	4281.	0.954
1284.	1.323	4284.	0.953
1287.	1.319	4287.	0.951
1290.	1.318	4290.	0.953
1293.	1.313	4293.	0.951
1296.	1.316	4296.	0.952
1299.	1.305	4299.	0.948
1302.	1.305	4302.	0.951
1305.	1.306	4305.	0.948

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1308.	1.307	4308.	0.947
1311.	1.306	4311.	0.947
1314.	1.311	4314.	0.944
1317.	1.304	4317.	0.947
1320.	1.304	4320.	0.943
1323.	1.29	4323.	0.947
1326.	1.304	4326.	0.95
1329.	1.309	4329.	0.948
1332.	1.31	4332.	0.951
1335.	1.304	4335.	0.949
1338.	1.308	4338.	0.952
1341.	1.306	4341.	0.95
1344.	1.305	4344.	0.945
1347.	1.308	4347.	0.946
1350.	1.303	4350.	0.946
1353.	1.307	4353.	0.947
1356.	1.302	4356.	0.953
1359.	1.302	4359.	0.955
1362.	1.301	4362.	0.955
1365.	1.298	4365.	0.946
1368.	1.3	4368.	0.946
1371.	1.298	4371.	0.943
1374.	1.297	4374.	0.94
1377.	1.297	4377.	0.945
1380.	1.301	4380.	0.944
1383.	1.301	4383.	0.944
1386.	1.295	4386.	0.949
1389.	1.298	4389.	0.956
1392.	1.295	4392.	0.954
1395.	1.293	4395.	0.958
1398.	1.289	4398.	0.956
1401.	1.293	4401.	0.957
1404.	1.293	4404.	0.954
1407.	1.295	4407.	0.951
1410.	1.272	4410.	0.949
1413.	1.275	4413.	0.95
1416.	1.272	4416.	0.952
1419.	1.269	4419.	0.955
1422.	1.273	4422.	0.955
1425.	1.275	4425.	0.959
1428.	1.272	4428.	0.961
1431.	1.271	4431.	0.958
1434.	1.27	4434.	0.958
1437.	1.266	4437.	0.959
1440.	1.263	4440.	0.959
1443.	1.262	4443.	0.961
1446.	1.267	4446.	0.959
1449.	1.265	4449.	0.958
1452.	1.267	4452.	0.959
1455.	1.269	4455.	0.957
1458.	1.264	4458.	0.956
1461.	1.263	4461.	0.953
1464.	1.258	4464.	0.963
1467.	1.26	4467.	0.959
1470.	1.26	4470.	0.954
1473.	1.258	4473.	0.956
1476.	1.257	4476.	0.955
1479.	1.26	4479.	0.955
1482.	1.265	4482.	0.955
1485.	1.268	4485.	0.956
1488.	1.265	4488.	0.952
1491.	1.262	4491.	0.947
1494.	1.251	4494.	0.948
1497.	1.238	4497.	0.95
1500.	1.215	4500.	0.951
1503.	1.218	4503.	0.95
1506.	1.22	4506.	0.951

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1509.	1.22	4509.	0.95
1512.	1.215	4512.	0.949
1515.	1.214	4515.	0.949
1518.	1.215	4518.	0.949
1521.	1.216	4521.	0.95
1524.	1.215	4524.	0.952
1527.	1.218	4527.	0.952
1530.	1.224	4530.	0.942
1533.	1.211	4533.	0.944
1536.	1.206	4536.	0.948
1539.	1.198	4539.	0.95
1542.	1.194	4542.	0.949
1545.	1.195	4545.	0.952
1548.	1.198	4548.	0.954
1551.	1.194	4551.	0.951
1554.	1.193	4554.	0.948
1557.	1.19	4557.	0.807
1560.	1.191	4560.	0.231
1563.	1.194	4563.	0.102
1566.	1.195	4566.	0.077
1569.	1.198	4569.	0.067
1572.	1.195	4572.	0.066
1575.	1.197	4575.	0.063
1578.	1.197	4578.	0.057
1581.	1.191	4581.	0.056
1584.	1.189	4584.	0.049
1587.	1.191	4587.	0.043
1590.	1.189	4590.	0.09
1593.	1.189	4593.	0.057
1596.	1.188	4596.	0.047
1599.	1.188	4599.	0.043
1602.	1.189	4602.	0.037
1605.	1.187	4605.	0.036
1608.	1.186	4608.	0.032
1611.	1.189	4611.	0.03
1614.	1.187	4614.	0.028
1617.	1.188	4617.	0.026
1620.	1.189	4620.	0.022
1623.	1.188	4623.	0.019
1626.	1.188	4626.	0.016
1629.	1.192	4629.	0.014
1632.	1.183	4632.	0.016
1635.	1.182	4635.	0.011
1638.	1.185	4638.	0.007
1641.	1.185	4641.	0.002
1644.	1.184	4644.	0.
1647.	1.183	4647.	0.001
1650.	1.183	4650.	0.002
1653.	1.181	4653.	0.005
1656.	1.181	4656.	0.009
1659.	1.18	4659.	0.011
1662.	1.179	4662.	0.012
1665.	1.178	4665.	0.012
1668.	1.177	4668.	0.015
1671.	1.174	4671.	0.016
1674.	1.181	4674.	0.016
1677.	1.175	4677.	0.02
1680.	1.171	4680.	0.02
1683.	1.173	4683.	0.022
1686.	1.169	4686.	0.026
1689.	1.173	4689.	0.024
1692.	1.172	4692.	0.025
1695.	1.172	4695.	0.026
1698.	1.169	4698.	0.027
1701.	1.181	4701.	0.028
1704.	1.169	4704.	0.029
1707.	1.171	4707.	0.029

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1710.	1.169	4710.	0.032
1713.	1.165	4713.	0.032
1716.	1.166	4716.	0.033
1719.	1.16	4719.	0.033
1722.	1.159	4722.	0.035
1725.	1.164	4725.	0.035
1728.	1.162	4728.	0.035
1731.	1.155	4731.	0.036
1734.	1.155	4734.	0.037
1737.	1.156	4737.	0.037
1740.	1.152	4740.	0.037
1743.	1.152	4743.	0.038
1746.	1.157	4746.	0.04
1749.	1.158	4749.	0.039
1752.	1.155	4752.	0.038
1755.	1.156	4755.	0.044
1758.	1.158	4758.	0.04
1761.	1.16	4761.	0.038
1764.	1.158	4764.	0.04
1767.	1.163	4767.	0.041
1770.	1.166	4770.	0.042
1773.	1.163	4773.	0.039
1776.	1.162	4776.	0.043
1779.	1.162	4779.	0.041
1782.	1.163	4782.	0.043
1785.	1.159	4785.	0.044
1788.	1.158	4788.	0.042
1791.	1.16	4791.	0.042
1794.	1.164	4794.	0.043
1797.	1.163	4797.	0.042
1800.	1.163	4800.	0.044
1803.	1.162	4803.	0.043
1806.	1.166	4806.	0.043
1809.	1.162	4809.	0.044
1812.	1.158	4812.	0.045
1815.	1.162	4815.	0.043
1818.	1.157	4818.	0.045
1821.	1.157	4821.	0.046
1824.	1.162	4824.	0.045
1827.	1.16	4827.	0.046
1830.	1.159	4830.	0.047
1833.	1.16	4833.	0.048
1836.	1.155	4836.	0.049
1839.	1.159	4839.	0.049
1842.	1.15	4842.	0.048
1845.	1.153	4845.	0.05
1848.	1.156	4848.	0.05
1851.	1.153	4851.	0.051
1854.	1.158	4854.	0.05
1857.	1.156	4857.	0.051
1860.	1.152	4860.	0.052
1863.	1.152	4863.	0.052
1866.	1.147	4866.	0.052
1869.	1.149	4869.	0.049
1872.	1.147	4872.	0.05
1875.	1.144	4875.	0.048
1878.	1.146	4878.	0.048
1881.	1.151	4881.	0.048
1884.	1.147	4884.	0.048
1887.	1.146	4887.	0.049
1890.	1.149	4890.	0.049
1893.	1.155	4893.	0.047
1896.	1.154	4896.	0.049
1899.	1.16	4899.	0.049
1902.	1.158	4902.	0.049
1905.	1.158	4905.	0.046
1908.	1.156	4908.	0.049

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1911.	1.155	4911.	0.049
1914.	1.16	4914.	0.048
1917.	1.166	4917.	0.048
1920.	1.16	4920.	0.048
1923.	1.161	4923.	0.049
1926.	1.157	4926.	0.051
1929.	1.159	4929.	0.048
1932.	1.157	4932.	0.05
1935.	1.155	4935.	0.05
1938.	1.157	4938.	0.051
1941.	1.161	4941.	0.049
1944.	1.16	4944.	0.048
1947.	1.16	4947.	0.048
1950.	1.158	4950.	0.047
1953.	1.152	4953.	0.048
1956.	1.153	4956.	0.048
1959.	1.153	4959.	0.046
1962.	1.15	4962.	0.049
1965.	1.154	4965.	0.049
1968.	1.15	4968.	0.049
1971.	1.15	4971.	0.048
1974.	1.149	4974.	0.049
1977.	1.142	4977.	0.051
1980.	1.145	4980.	0.052
1983.	1.148	4983.	0.052
1986.	1.149	4986.	0.051
1989.	1.146	4989.	0.051
1992.	1.151	4992.	0.054
1995.	1.148	4995.	0.051
1998.	1.146	4998.	0.052
2001.	1.145	5001.	0.054
2004.	1.143	5004.	0.054
2007.	1.137	5007.	0.055
2010.	1.138	5010.	0.054
2013.	1.141	5013.	0.055
2016.	1.138	5016.	0.054
2019.	1.14	5019.	0.055
2022.	1.137	5022.	0.055
2025.	1.139	5025.	0.056
2028.	1.136	5028.	0.056
2031.	1.137	5031.	0.057
2034.	1.139	5034.	0.055
2037.	1.136	5037.	0.054
2040.	1.138	5040.	0.055
2043.	1.137	5043.	0.053
2046.	1.135	5046.	0.055
2049.	1.131	5049.	0.054
2052.	1.133	5052.	0.053
2055.	1.131	5055.	0.052
2058.	1.129	5058.	0.052
2061.	1.128	5061.	0.053
2064.	1.125	5064.	0.051
2067.	1.128	5067.	0.053
2070.	1.13	5070.	0.052
2073.	1.114	5073.	0.052
2076.	1.111	5076.	0.051
2079.	1.108	5079.	0.053
2082.	1.107	5082.	0.051
2085.	1.112	5085.	0.05
2088.	1.113	5088.	0.049
2091.	1.109	5091.	0.047
2094.	1.107	5094.	0.049
2097.	1.114	5097.	0.047
2100.	1.115	5100.	0.048
2103.	1.116	5103.	0.049
2106.	1.118	5106.	0.047
2109.	1.12	5109.	0.048

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
2112.	1.119	5112.	0.048
2115.	1.117	5115.	0.05
2118.	1.116	5118.	0.051
2121.	1.112	5121.	0.052
2124.	1.115	5124.	0.051
2127.	1.115	5127.	0.052
2130.	1.121	5130.	0.049
2133.	1.122	5133.	0.052
2136.	1.125	5136.	0.053
2139.	1.121	5139.	0.05
2142.	1.111	5142.	0.052
2145.	1.11	5145.	0.053
2148.	1.118	5148.	0.055
2151.	1.118	5151.	0.055
2154.	1.12	5154.	0.054
2157.	1.119	5157.	0.053
2160.	1.116	5160.	0.057
2163.	1.118	5163.	0.059
2166.	1.126	5166.	0.056
2169.	1.124	5169.	0.059
2172.	1.124	5172.	0.056
2175.	1.123	5175.	0.056
2178.	1.12	5178.	0.058
2181.	1.121	5181.	0.058
2184.	1.125	5184.	0.061
2187.	1.126	5187.	0.062
2190.	1.123	5190.	0.061
2193.	1.124	5193.	0.063
2196.	1.12	5196.	0.063
2199.	1.118	5199.	0.066
2202.	1.117	5202.	0.065
2205.	1.117	5205.	0.065
2208.	1.112	5208.	0.065
2211.	1.114	5211.	0.064
2214.	1.117	5214.	0.065
2217.	1.112	5217.	0.064
2220.	1.111	5220.	0.063
2223.	1.115	5223.	0.062
2226.	1.116	5226.	0.063
2229.	1.116	5229.	0.063
2232.	1.12	5232.	0.063
2235.	1.118	5235.	0.063
2238.	1.112	5238.	0.064
2241.	1.116	5241.	0.062
2244.	1.114	5244.	0.063
2247.	1.111	5247.	0.062
2250.	1.109	5250.	0.061
2253.	1.111	5253.	0.062
2256.	1.115	5256.	0.064
2259.	1.119	5259.	0.065
2262.	1.117	5262.	0.063
2265.	1.109	5265.	0.066
2268.	1.105	5268.	0.063
2271.	1.102	5271.	0.066
2274.	1.098	5274.	0.066
2277.	1.103	5277.	0.067
2280.	1.107	5280.	0.067
2283.	1.104	5283.	0.069
2286.	1.108	5286.	0.069
2289.	1.109	5289.	0.069
2292.	1.106	5292.	0.069
2295.	1.103	5295.	0.067
2298.	1.107	5298.	0.067
2301.	1.111	5301.	0.068
2304.	1.107	5304.	0.07
2307.	1.107	5307.	0.07
2310.	1.107	5310.	0.069

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2313.	1.107	5313.	0.07
2316.	1.11	5316.	0.072
2319.	1.109	5319.	0.07
2322.	1.107	5322.	0.073
2325.	1.104	5325.	0.074
2328.	1.095	5328.	0.073
2331.	1.099	5331.	0.072
2334.	1.1	5334.	0.072
2337.	1.104	5337.	0.073
2340.	1.1	5340.	0.073
2343.	1.097	5343.	0.075
2346.	1.097	5346.	0.075
2349.	1.095	5349.	0.075
2352.	1.096	5352.	0.074
2355.	1.093	5355.	0.075
2358.	1.094	5358.	0.074
2361.	1.093	5361.	0.077
2364.	1.088	5364.	0.077
2367.	1.09	5367.	0.073
2370.	1.087	5370.	0.074
2373.	1.086	5373.	0.076
2376.	1.086	5376.	0.074
2379.	1.087	5379.	0.074
2382.	1.085	5382.	0.072
2385.	1.084	5385.	0.074
2388.	1.084	5388.	0.074
2391.	1.081	5391.	0.073
2394.	1.073	5394.	0.074
2397.	1.076	5397.	0.073
2400.	1.073	5400.	0.073
2403.	1.073	5403.	0.074
2406.	1.075	5406.	0.074
2409.	1.074	5409.	0.074
2412.	1.073	5412.	0.076
2415.	1.074	5415.	0.075
2418.	1.075	5418.	0.075
2421.	1.075	5421.	0.075
2424.	1.075	5424.	0.075
2427.	1.072	5427.	0.076
2430.	1.076	5430.	0.076
2433.	1.08	5433.	0.076
2436.	1.077	5436.	0.078
2439.	1.077	5439.	0.076
2442.	1.05	5442.	0.075
2445.	1.05	5445.	0.079
2448.	1.056	5448.	0.076
2451.	1.058	5451.	0.079
2454.	1.058	5454.	0.077
2457.	1.052	5457.	0.079
2460.	1.057	5460.	0.079
2463.	1.052	5463.	0.078
2466.	1.053	5466.	0.08
2469.	1.052	5469.	0.081
2472.	1.049	5472.	0.081
2475.	1.052	5475.	0.078
2478.	1.05	5478.	0.081
2481.	1.053	5481.	0.082
2484.	1.054	5484.	0.082
2487.	1.053	5487.	0.083
2490.	1.058	5490.	0.081
2493.	1.051	5493.	0.085
2496.	1.053	5496.	0.083
2499.	1.057	5499.	0.084
2502.	1.056	5502.	0.084
2505.	1.054	5505.	0.082
2508.	1.052	5508.	0.086
2511.	1.056	5511.	0.084

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2514.	1.053	5514.	0.085
2517.	1.058	5517.	0.085
2520.	1.053	5520.	0.084
2523.	1.052	5523.	0.086
2526.	1.049	5526.	0.084
2529.	1.049	5529.	0.086
2532.	1.05	5532.	0.086
2535.	1.045	5535.	0.086
2538.	1.05	5538.	0.086
2541.	1.051	5541.	0.088
2544.	1.048	5544.	0.086
2547.	1.05	5547.	0.087
2550.	1.047	5550.	0.086
2553.	1.047	5553.	0.086
2556.	1.05	5556.	0.085
2559.	1.049	5559.	0.085
2562.	1.051	5562.	0.084
2565.	1.049	5565.	0.084
2568.	1.048	5568.	0.083
2571.	1.046	5571.	0.083
2574.	1.048	5574.	0.082
2577.	1.044	5577.	0.083
2580.	1.041	5580.	0.083
2583.	1.041	5583.	0.084
2586.	1.039	5586.	0.085
2589.	1.043	5589.	0.082
2592.	1.044	5592.	0.082
2595.	1.04	5595.	0.082
2598.	1.039	5598.	0.082
2601.	1.034	5601.	0.082
2604.	1.036	5604.	0.082
2607.	1.041	5607.	0.083
2610.	1.04	5610.	0.08
2613.	1.045	5613.	0.081
2616.	1.045	5616.	0.078
2619.	1.049	5619.	0.08
2622.	1.049	5622.	0.08
2625.	1.046	5625.	0.08
2628.	1.047	5628.	0.079
2631.	1.043	5631.	0.078
2634.	1.044	5634.	0.079
2637.	1.045	5637.	0.081
2640.	1.017	5640.	0.082
2643.	1.028	5643.	0.082
2646.	1.034	5646.	0.079
2649.	1.031	5649.	0.082
2652.	1.024	5652.	0.081
2655.	1.025	5655.	0.081
2658.	1.026	5658.	0.08
2661.	1.023	5661.	0.08
2664.	1.022	5664.	0.079
2667.	1.025	5667.	0.083
2670.	1.021	5670.	0.082
2673.	1.019	5673.	0.082
2676.	1.02	5676.	0.081
2679.	1.02	5679.	0.085
2682.	1.02	5682.	0.082
2685.	1.022	5685.	0.082
2688.	1.023	5688.	0.081
2691.	1.02	5691.	0.08
2694.	1.017	5694.	0.081
2697.	1.015	5697.	0.082
2700.	1.012	5700.	0.079
2703.	1.017	5703.	0.078
2706.	1.014	5706.	0.079
2709.	1.019	5709.	0.08
2712.	1.022	5712.	0.081

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2715.	1.023	5715.	0.077
2718.	1.019	5718.	0.077
2721.	1.019	5721.	0.077
2724.	1.019	5724.	0.08
2727.	1.02	5727.	0.077
2730.	1.017	5730.	0.076
2733.	1.017	5733.	0.076
2736.	1.019	5736.	0.076
2739.	1.017	5739.	0.074
2742.	1.018	5742.	0.073
2745.	1.015	5745.	0.076
2748.	1.015	5748.	0.073
2751.	1.011	5751.	0.073
2754.	1.013	5754.	0.073
2757.	1.012	5757.	0.074
2760.	1.015	5760.	0.074
2763.	1.013	5763.	0.072
2766.	1.012	5766.	0.073
2769.	1.01	5769.	0.07
2772.	1.011	5772.	0.07
2775.	1.012	5775.	0.068
2778.	1.014	5778.	0.07
2781.	1.016	5781.	0.071
2784.	1.014	5784.	0.068
2787.	1.014	5787.	0.067
2790.	1.015	5790.	0.067
2793.	1.017	5793.	0.066
2796.	1.02	5796.	0.067
2799.	1.018	5799.	0.066
2802.	1.022	5802.	0.068
2805.	1.019	5805.	0.066
2808.	1.018	5808.	0.066
2811.	1.019	5811.	0.067
2814.	1.016	5814.	0.07
2817.	1.016	5817.	0.068
2820.	1.013	5820.	0.072
2823.	1.004	5823.	0.071
2826.	1.008	5826.	0.068
2829.	1.011	5829.	0.07
2832.	1.008	5832.	0.071
2835.	1.011	5835.	0.07
2838.	1.009	5838.	0.071
2841.	1.01	5841.	0.071
2844.	1.008	5844.	0.071
2847.	1.014	5847.	0.07
2850.	1.005	5850.	0.074
2853.	1.006	5853.	0.071
2856.	1.013	5856.	0.069
2859.	1.007	5859.	0.071
2862.	1.006	5862.	0.071
2865.	1.008	5865.	0.07
2868.	1.006	5868.	0.07
2871.	1.002	5871.	0.069
2874.	1.001	5874.	0.07
2877.	1.009	5877.	0.072
2880.	1.006	5880.	0.069
2883.	1.	5883.	0.069
2886.	0.998	5886.	0.067
2889.	0.999	5889.	0.067
2892.	0.999	5892.	0.071
2895.	0.994	5895.	0.067
2898.	0.998	5898.	0.067
2901.	1.003	5901.	0.067
2904.	0.996	5904.	0.066
2907.	0.992	5907.	0.066
2910.	1.002	5910.	0.066
2913.	0.999	5913.	0.066

## AQTESOLV for Windows

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
2916.	1.	5916.	0.068
2919.	1.001	5919.	0.064
2922.	1.008	5922.	0.063
2925.	1.007	5925.	0.063
2928.	1.004	5928.	0.063
2931.	1.005	5931.	0.065
2934.	1.005	5934.	0.062
2937.	0.998	5937.	0.062
2940.	0.999	5940.	0.062
2943.	1.002	5943.	0.065
2946.	1.001	5946.	0.064
2949.	0.997	5949.	0.062
2952.	0.998	5952.	0.063
2955.	1.001	5955.	0.064
2958.	1.003	5958.	0.061
2961.	0.998	5961.	0.059
2964.	1.	5964.	0.063
2967.	0.998	5967.	0.062
2970.	0.994	5970.	0.063
2973.	0.99	5973.	0.063
2976.	0.99	5976.	0.061
2979.	0.986	5979.	0.062
2982.	0.983	5982.	0.061
2985.	0.979	5985.	0.06
2988.	0.978	5988.	0.062
2991.	0.976	5991.	0.061
2994.	0.973	5994.	0.063
2997.	0.972	5997.	0.063
3000.	0.965	6000.	0.063

Observation Well No. 3: SB-19U-SX Location: 0. ft  
Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 2000

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
3.	0.013	3003.	0.554
6.	0.012	3006.	0.554
9.	0.008	3009.	0.551
12.	0.006	3012.	0.552
15.	0.013	3015.	0.553
18.	0.013	3018.	0.554
21.	0.014	3021.	0.554
24.	0.002	3024.	0.557
27.	0.046	3027.	0.557
30.	0.029	3030.	0.553
33.	0.098	3033.	0.555
36.	0.239	3036.	0.556
39.	0.265	3039.	0.557
42.	0.29	3042.	0.559
45.	0.298	3045.	0.551
48.	0.312	3048.	0.554
51.	0.33	3051.	0.555
54.	0.34	3054.	0.555
57.	0.346	3057.	0.558
60.	0.354	3060.	0.557
63.	0.368	3063.	0.557
66.	0.378	3066.	0.556
69.	0.387	3069.	0.562
72.	0.396	3072.	0.556

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
276.	0.613	3276.	0.546
279.	0.616	3279.	0.546
282.	0.616	3282.	0.546
285.	0.616	3285.	0.549
288.	0.62	3288.	0.545
291.	0.62	3291.	0.55
294.	0.621	3294.	0.546
297.	0.621	3297.	0.548
300.	0.622	3300.	0.549
303.	0.623	3303.	0.546
306.	0.624	3306.	0.549
309.	0.624	3309.	0.549
312.	0.625	3312.	0.547
315.	0.625	3315.	0.547
318.	0.627	3318.	0.549
321.	0.628	3321.	0.548
324.	0.63	3324.	0.546
327.	0.63	3327.	0.546
330.	0.628	3330.	0.55
333.	0.63	3333.	0.547
336.	0.631	3336.	0.548
339.	0.633	3339.	0.547
342.	0.633	3342.	0.549
345.	0.632	3345.	0.548
348.	0.635	3348.	0.549
351.	0.636	3351.	0.547
354.	0.635	3354.	0.554
357.	0.636	3357.	0.549
360.	0.638	3360.	0.547
363.	0.638	3363.	0.554
366.	0.639	3366.	0.548
369.	0.641	3369.	0.551
372.	0.639	3372.	0.553
375.	0.641	3375.	0.553
378.	0.642	3378.	0.551
381.	0.645	3381.	0.557
384.	0.644	3384.	0.555
387.	0.643	3387.	0.558
390.	0.644	3390.	0.557
393.	0.646	3393.	0.556
396.	0.646	3396.	0.557
399.	0.647	3399.	0.556
402.	0.647	3402.	0.553
405.	0.647	3405.	0.557
408.	0.649	3408.	0.556
411.	0.649	3411.	0.553
414.	0.648	3414.	0.554
417.	0.649	3417.	0.553
420.	0.648	3420.	0.554
423.	0.65	3423.	0.555
426.	0.652	3426.	0.557
429.	0.653	3429.	0.559
432.	0.654	3432.	0.556
435.	0.653	3435.	0.552
438.	0.655	3438.	0.555
441.	0.658	3441.	0.552
444.	0.655	3444.	0.551
447.	0.654	3447.	0.553
450.	0.654	3450.	0.554
453.	0.657	3453.	0.555
456.	0.656	3456.	0.555
459.	0.655	3459.	0.552
462.	0.656	3462.	0.554
465.	0.656	3465.	0.554
468.	0.654	3468.	0.554
471.	0.657	3471.	0.555
474.	0.656	3474.	0.55

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
477.	0.657	3477.	0.553
480.	0.655	3480.	0.553
483.	0.656	3483.	0.551
486.	0.653	3486.	0.552
489.	0.654	3489.	0.552
492.	0.654	3492.	0.551
495.	0.655	3495.	0.552
498.	0.655	3498.	0.553
501.	0.652	3501.	0.552
504.	0.655	3504.	0.554
507.	0.652	3507.	0.556
510.	0.654	3510.	0.556
513.	0.652	3513.	0.557
516.	0.655	3516.	0.555
519.	0.654	3519.	0.555
522.	0.652	3522.	0.552
525.	0.655	3525.	0.555
528.	0.654	3528.	0.557
531.	0.654	3531.	0.558
534.	0.652	3534.	0.553
537.	0.651	3537.	0.553
540.	0.653	3540.	0.554
543.	0.655	3543.	0.554
546.	0.652	3546.	0.553
549.	0.654	3549.	0.554
552.	0.653	3552.	0.553
555.	0.655	3555.	0.556
558.	0.673	3558.	0.553
561.	0.654	3561.	0.554
564.	0.656	3564.	0.554
567.	0.656	3567.	0.555
570.	0.654	3570.	0.556
573.	0.654	3573.	0.555
576.	0.655	3576.	0.556
579.	0.653	3579.	0.556
582.	0.654	3582.	0.552
585.	0.654	3585.	0.554
588.	0.656	3588.	0.558
591.	0.657	3591.	0.557
594.	0.656	3594.	0.556
597.	0.655	3597.	0.557
600.	0.654	3600.	0.556
603.	0.654	3603.	0.557
606.	0.654	3606.	0.557
609.	0.653	3609.	0.559
612.	0.655	3612.	0.557
615.	0.654	3615.	0.558
618.	0.655	3618.	0.557
621.	0.652	3621.	0.555
624.	0.654	3624.	0.555
627.	0.653	3627.	0.553
630.	0.655	3630.	0.557
633.	0.651	3633.	0.556
636.	0.654	3636.	0.557
639.	0.651	3639.	0.557
642.	0.651	3642.	0.56
645.	0.655	3645.	0.56
648.	0.651	3648.	0.557
651.	0.651	3651.	0.555
654.	0.656	3654.	0.557
657.	0.65	3657.	0.557
660.	0.649	3660.	0.561
663.	0.652	3663.	0.561
666.	0.649	3666.	0.559
669.	0.651	3669.	0.559
672.	0.651	3672.	0.561
675.	0.649	3675.	0.558

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
678.	0.65	3678.	0.558
681.	0.649	3681.	0.56
684.	0.648	3684.	0.56
687.	0.648	3687.	0.56
690.	0.647	3690.	0.559
693.	0.643	3693.	0.558
696.	0.641	3696.	0.558
699.	0.645	3699.	0.56
702.	0.646	3702.	0.558
705.	0.645	3705.	0.558
708.	0.641	3708.	0.558
711.	0.641	3711.	0.561
714.	0.643	3714.	0.56
717.	0.642	3717.	0.557
720.	0.641	3720.	0.555
723.	0.64	3723.	0.559
726.	0.642	3726.	0.556
729.	0.642	3729.	0.557
732.	0.641	3732.	0.557
735.	0.642	3735.	0.558
738.	0.639	3738.	0.559
741.	0.642	3741.	0.559
744.	0.643	3744.	0.558
747.	0.644	3747.	0.559
750.	0.641	3750.	0.556
753.	0.641	3753.	0.556
756.	0.641	3756.	0.559
759.	0.641	3759.	0.557
762.	0.64	3762.	0.557
765.	0.637	3765.	0.559
768.	0.641	3768.	0.557
771.	0.639	3771.	0.559
774.	0.64	3774.	0.558
777.	0.641	3777.	0.557
780.	0.641	3780.	0.557
783.	0.641	3783.	0.555
786.	0.639	3786.	0.557
789.	0.639	3789.	0.554
792.	0.642	3792.	0.56
795.	0.639	3795.	0.559
798.	0.64	3798.	0.556
801.	0.64	3801.	0.56
804.	0.639	3804.	0.564
807.	0.637	3807.	0.559
810.	0.636	3810.	0.561
813.	0.636	3813.	0.561
816.	0.638	3816.	0.563
819.	0.638	3819.	0.56
822.	0.64	3822.	0.563
825.	0.639	3825.	0.561
828.	0.636	3828.	0.561
831.	0.636	3831.	0.559
834.	0.638	3834.	0.561
837.	0.637	3837.	0.558
840.	0.636	3840.	0.559
843.	0.636	3843.	0.557
846.	0.638	3846.	0.557
849.	0.636	3849.	0.559
852.	0.636	3852.	0.557
855.	0.636	3855.	0.558
858.	0.634	3858.	0.558
861.	0.638	3861.	0.559
864.	0.632	3864.	0.559
867.	0.633	3867.	0.559
870.	0.633	3870.	0.56
873.	0.634	3873.	0.562
876.	0.631	3876.	0.559

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
879.	0.631	3879.	0.561
882.	0.632	3882.	0.561
885.	0.629	3885.	0.559
888.	0.627	3888.	0.561
891.	0.628	3891.	0.562
894.	0.627	3894.	0.56
897.	0.627	3897.	0.562
900.	0.624	3900.	0.572
903.	0.626	3903.	0.566
906.	0.626	3906.	0.566
909.	0.626	3909.	0.563
912.	0.626	3912.	0.564
915.	0.625	3915.	0.561
918.	0.625	3918.	0.564
921.	0.623	3921.	0.561
924.	0.626	3924.	0.562
927.	0.626	3927.	0.561
930.	0.625	3930.	0.562
933.	0.623	3933.	0.563
936.	0.624	3936.	0.561
939.	0.626	3939.	0.561
942.	0.625	3942.	0.56
945.	0.627	3945.	0.561
948.	0.627	3948.	0.562
951.	0.624	3951.	0.562
954.	0.625	3954.	0.559
957.	0.626	3957.	0.561
960.	0.627	3960.	0.56
963.	0.626	3963.	0.561
966.	0.625	3966.	0.56
969.	0.627	3969.	0.56
972.	0.625	3972.	0.559
975.	0.626	3975.	0.558
978.	0.627	3978.	0.557
981.	0.626	3981.	0.559
984.	0.627	3984.	0.559
987.	0.626	3987.	0.559
990.	0.63	3990.	0.56
993.	0.632	3993.	0.559
996.	0.622	3996.	0.56
999.	0.625	3999.	0.56
1002.	0.628	4002.	0.56
1005.	0.629	4005.	0.558
1008.	0.632	4008.	0.558
1011.	0.623	4011.	0.561
1014.	0.629	4014.	0.563
1017.	0.627	4017.	0.564
1020.	0.626	4020.	0.564
1023.	0.625	4023.	0.566
1026.	0.628	4026.	0.566
1029.	0.629	4029.	0.565
1032.	0.626	4032.	0.564
1035.	0.625	4035.	0.567
1038.	0.629	4038.	0.569
1041.	0.629	4041.	0.571
1044.	0.629	4044.	0.573
1047.	0.63	4047.	0.569
1050.	0.629	4050.	0.569
1053.	0.625	4053.	0.562
1056.	0.625	4056.	0.571
1059.	0.624	4059.	0.571
1062.	0.624	4062.	0.569
1065.	0.625	4065.	0.576
1068.	0.621	4068.	0.572
1071.	0.622	4071.	0.57
1074.	0.62	4074.	0.571
1077.	0.621	4077.	0.564

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1080.	0.622	4080.	0.564
1083.	0.617	4083.	0.56
1086.	0.62	4086.	0.577
1089.	0.62	4089.	0.575
1092.	0.62	4092.	0.569
1095.	0.619	4095.	0.569
1098.	0.619	4098.	0.594
1101.	0.617	4101.	0.565
1104.	0.618	4104.	0.572
1107.	0.62	4107.	0.561
1110.	0.619	4110.	0.57
1113.	0.62	4113.	0.588
1116.	0.619	4116.	0.575
1119.	0.62	4119.	0.56
1122.	0.618	4122.	0.543
1125.	0.618	4125.	0.592
1128.	0.62	4128.	0.568
1131.	0.618	4131.	0.564
1134.	0.617	4134.	0.596
1137.	0.622	4137.	0.58
1140.	0.62	4140.	0.561
1143.	0.62	4143.	0.58
1146.	0.619	4146.	0.57
1149.	0.619	4149.	0.582
1152.	0.621	4152.	0.588
1155.	0.622	4155.	0.578
1158.	0.625	4158.	0.57
1161.	0.623	4161.	0.6
1164.	0.623	4164.	0.542
1167.	0.621	4167.	0.606
1170.	0.621	4170.	0.605
1173.	0.622	4173.	0.614
1176.	0.624	4176.	0.465
1179.	0.624	4179.	0.642
1182.	0.62	4182.	0.539
1185.	0.621	4185.	0.576
1188.	0.622	4188.	0.631
1191.	0.623	4191.	0.512
1194.	0.622	4194.	0.602
1197.	0.62	4197.	0.528
1200.	0.622	4200.	0.514
1203.	0.624	4203.	0.626
1206.	0.622	4206.	0.549
1209.	0.624	4209.	0.512
1212.	0.623	4212.	0.542
1215.	0.623	4215.	0.554
1218.	0.622	4218.	0.557
1221.	0.623	4221.	0.562
1224.	0.623	4224.	0.603
1227.	0.62	4227.	0.576
1230.	0.621	4230.	0.634
1233.	0.622	4233.	0.622
1236.	0.621	4236.	0.489
1239.	0.622	4239.	0.531
1242.	0.62	4242.	0.592
1245.	0.617	4245.	0.544
1248.	0.618	4248.	0.603
1251.	0.618	4251.	0.577
1254.	0.619	4254.	0.572
1257.	0.619	4257.	0.574
1260.	0.617	4260.	0.571
1263.	0.618	4263.	0.572
1266.	0.62	4266.	0.569
1269.	0.619	4269.	0.57
1272.	0.618	4272.	0.57
1275.	0.616	4275.	0.57
1278.	0.618	4278.	0.57

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1281.	0.616	4281.	0.57
1284.	0.616	4284.	0.57
1287.	0.619	4287.	0.57
1290.	0.619	4290.	0.57
1293.	0.622	4293.	0.57
1296.	0.619	4296.	0.571
1299.	0.619	4299.	0.572
1302.	0.619	4302.	0.571
1305.	0.618	4305.	0.572
1308.	0.618	4308.	0.57
1311.	0.617	4311.	0.571
1314.	0.617	4314.	0.569
1317.	0.617	4317.	0.569
1320.	0.618	4320.	0.568
1323.	0.616	4323.	0.567
1326.	0.617	4326.	0.564
1329.	0.617	4329.	0.568
1332.	0.616	4332.	0.567
1335.	0.617	4335.	0.567
1338.	0.618	4338.	0.567
1341.	0.619	4341.	0.567
1344.	0.615	4344.	0.568
1347.	0.614	4347.	0.569
1350.	0.612	4350.	0.565
1353.	0.612	4353.	0.567
1356.	0.613	4356.	0.568
1359.	0.612	4359.	0.568
1362.	0.613	4362.	0.57
1365.	0.612	4365.	0.568
1368.	0.611	4368.	0.517
1371.	0.611	4371.	0.393
1374.	0.61	4374.	0.354
1377.	0.61	4377.	0.332
1380.	0.611	4380.	0.319
1383.	0.61	4383.	0.307
1386.	0.612	4386.	0.301
1389.	0.612	4389.	0.289
1392.	0.607	4392.	0.28
1395.	0.61	4395.	0.275
1398.	0.61	4398.	0.269
1401.	0.611	4401.	0.265
1404.	0.611	4404.	0.256
1407.	0.616	4407.	0.255
1410.	0.616	4410.	0.249
1413.	0.615	4413.	0.242
1416.	0.614	4416.	0.239
1419.	0.616	4419.	0.233
1422.	0.615	4422.	0.23
1425.	0.612	4425.	0.228
1428.	0.611	4428.	0.223
1431.	0.61	4431.	0.218
1434.	0.609	4434.	0.215
1437.	0.611	4437.	0.211
1440.	0.612	4440.	0.208
1443.	0.611	4443.	0.205
1446.	0.611	4446.	0.199
1449.	0.61	4449.	0.196
1452.	0.613	4452.	0.193
1455.	0.61	4455.	0.189
1458.	0.61	4458.	0.188
1461.	0.612	4461.	0.183
1464.	0.608	4464.	0.18
1467.	0.609	4467.	0.178
1470.	0.61	4470.	0.174
1473.	0.61	4473.	0.175
1476.	0.607	4476.	0.169
1479.	0.605	4479.	0.169

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1482.	0.606	4482.	0.166
1485.	0.607	4485.	0.163
1488.	0.606	4488.	0.161
1491.	0.607	4491.	0.16
1494.	0.608	4494.	0.155
1497.	0.61	4497.	0.156
1500.	0.61	4500.	0.156
1503.	0.61	4503.	0.152
1506.	0.608	4506.	0.148
1509.	0.609	4509.	0.148
1512.	0.611	4512.	0.147
1515.	0.606	4515.	0.146
1518.	0.605	4518.	0.145
1521.	0.605	4521.	0.142
1524.	0.606	4524.	0.14
1527.	0.606	4527.	0.139
1530.	0.606	4530.	0.136
1533.	0.605	4533.	0.137
1536.	0.605	4536.	0.136
1539.	0.607	4539.	0.133
1542.	0.608	4542.	0.133
1545.	0.607	4545.	0.13
1548.	0.61	4548.	0.129
1551.	0.609	4551.	0.129
1554.	0.608	4554.	0.128
1557.	0.607	4557.	0.126
1560.	0.606	4560.	0.123
1563.	0.61	4563.	0.125
1566.	0.609	4566.	0.124
1569.	0.607	4569.	0.125
1572.	0.608	4572.	0.122
1575.	0.61	4575.	0.121
1578.	0.608	4578.	0.121
1581.	0.608	4581.	0.119
1584.	0.609	4584.	0.119
1587.	0.608	4587.	0.118
1590.	0.606	4590.	0.116
1593.	0.609	4593.	0.116
1596.	0.608	4596.	0.117
1599.	0.611	4599.	0.116
1602.	0.608	4602.	0.115
1605.	0.608	4605.	0.114
1608.	0.608	4608.	0.113
1611.	0.609	4611.	0.112
1614.	0.613	4614.	0.113
1617.	0.612	4617.	0.111
1620.	0.611	4620.	0.11
1623.	0.609	4623.	0.109
1626.	0.61	4626.	0.111
1629.	0.609	4629.	0.108
1632.	0.609	4632.	0.107
1635.	0.609	4635.	0.107
1638.	0.609	4638.	0.103
1641.	0.607	4641.	0.102
1644.	0.609	4644.	0.103
1647.	0.608	4647.	0.102
1650.	0.606	4650.	0.101
1653.	0.608	4653.	0.098
1656.	0.61	4656.	0.098
1659.	0.609	4659.	0.098
1662.	0.608	4662.	0.097
1665.	0.606	4665.	0.097
1668.	0.605	4668.	0.095
1671.	0.607	4671.	0.092
1674.	0.606	4674.	0.094
1677.	0.606	4677.	0.094
1680.	0.606	4680.	0.094

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1683.	0.605	4683.	0.093
1686.	0.606	4686.	0.095
1689.	0.607	4689.	0.091
1692.	0.606	4692.	0.091
1695.	0.606	4695.	0.091
1698.	0.607	4698.	0.091
1701.	0.608	4701.	0.09
1704.	0.607	4704.	0.091
1707.	0.608	4707.	0.089
1710.	0.61	4710.	0.091
1713.	0.608	4713.	0.09
1716.	0.608	4716.	0.088
1719.	0.605	4719.	0.087
1722.	0.608	4722.	0.087
1725.	0.606	4725.	0.088
1728.	0.61	4728.	0.087
1731.	0.608	4731.	0.087
1734.	0.607	4734.	0.086
1737.	0.609	4737.	0.087
1740.	0.608	4740.	0.089
1743.	0.609	4743.	0.086
1746.	0.609	4746.	0.086
1749.	0.609	4749.	0.087
1752.	0.61	4752.	0.087
1755.	0.609	4755.	0.087
1758.	0.607	4758.	0.086
1761.	0.608	4761.	0.087
1764.	0.609	4764.	0.086
1767.	0.61	4767.	0.089
1770.	0.612	4770.	0.089
1773.	0.61	4773.	0.088
1776.	0.61	4776.	0.085
1779.	0.61	4779.	0.086
1782.	0.613	4782.	0.087
1785.	0.61	4785.	0.085
1788.	0.608	4788.	0.085
1791.	0.608	4791.	0.085
1794.	0.609	4794.	0.086
1797.	0.608	4797.	0.084
1800.	0.609	4800.	0.085
1803.	0.609	4803.	0.088
1806.	0.609	4806.	0.085
1809.	0.607	4809.	0.086
1812.	0.61	4812.	0.086
1815.	0.608	4815.	0.083
1818.	0.609	4818.	0.084
1821.	0.611	4821.	0.083
1824.	0.609	4824.	0.085
1827.	0.608	4827.	0.084
1830.	0.608	4830.	0.083
1833.	0.608	4833.	0.083
1836.	0.609	4836.	0.083
1839.	0.61	4839.	0.083
1842.	0.61	4842.	0.084
1845.	0.608	4845.	0.085
1848.	0.608	4848.	0.082
1851.	0.607	4851.	0.086
1854.	0.608	4854.	0.086
1857.	0.607	4857.	0.085
1860.	0.605	4860.	0.084
1863.	0.606	4863.	0.086
1866.	0.605	4866.	0.086
1869.	0.605	4869.	0.085
1872.	0.604	4872.	0.086
1875.	0.604	4875.	0.087
1878.	0.603	4878.	0.088
1881.	0.603	4881.	0.086

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1884.	0.603	4884.	0.086
1887.	0.604	4887.	0.086
1890.	0.604	4890.	0.087
1893.	0.603	4893.	0.089
1896.	0.605	4896.	0.088
1899.	0.604	4899.	0.092
1902.	0.604	4902.	0.09
1905.	0.603	4905.	0.089
1908.	0.603	4908.	0.091
1911.	0.605	4911.	0.09
1914.	0.606	4914.	0.09
1917.	0.607	4917.	0.09
1920.	0.608	4920.	0.091
1923.	0.606	4923.	0.088
1926.	0.606	4926.	0.088
1929.	0.605	4929.	0.087
1932.	0.605	4932.	0.086
1935.	0.607	4935.	0.087
1938.	0.609	4938.	0.088
1941.	0.608	4941.	0.089
1944.	0.605	4944.	0.085
1947.	0.606	4947.	0.087
1950.	0.6	4950.	0.088
1953.	0.605	4953.	0.088
1956.	0.603	4956.	0.087
1959.	0.601	4959.	0.086
1962.	0.605	4962.	0.086
1965.	0.601	4965.	0.087
1968.	0.6	4968.	0.086
1971.	0.603	4971.	0.085
1974.	0.61	4974.	0.085
1977.	0.611	4977.	0.086
1980.	0.608	4980.	0.084
1983.	0.602	4983.	0.084
1986.	0.6	4986.	0.083
1989.	0.603	4989.	0.085
1992.	0.603	4992.	0.085
1995.	0.603	4995.	0.085
1998.	0.603	4998.	0.085
2001.	0.603	5001.	0.085
2004.	0.597	5004.	0.085
2007.	0.598	5007.	0.085
2010.	0.596	5010.	0.084
2013.	0.596	5013.	0.084
2016.	0.599	5016.	0.085
2019.	0.604	5019.	0.083
2022.	0.607	5022.	0.083
2025.	0.601	5025.	0.083
2028.	0.603	5028.	0.085
2031.	0.6	5031.	0.086
2034.	0.608	5034.	0.084
2037.	0.603	5037.	0.085
2040.	0.6	5040.	0.088
2043.	0.601	5043.	0.086
2046.	0.598	5046.	0.085
2049.	0.595	5049.	0.085
2052.	0.595	5052.	0.088
2055.	0.595	5055.	0.084
2058.	0.597	5058.	0.088
2061.	0.601	5061.	0.085
2064.	0.594	5064.	0.086
2067.	0.595	5067.	0.085
2070.	0.599	5070.	0.085
2073.	0.597	5073.	0.084
2076.	0.592	5076.	0.082
2079.	0.589	5079.	0.084
2082.	0.589	5082.	0.083

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2085.	0.59	5085.	0.082
2088.	0.593	5088.	0.082
2091.	0.59	5091.	0.08
2094.	0.592	5094.	0.082
2097.	0.594	5097.	0.082
2100.	0.597	5100.	0.081
2103.	0.594	5103.	0.083
2106.	0.593	5106.	0.082
2109.	0.593	5109.	0.082
2112.	0.592	5112.	0.083
2115.	0.592	5115.	0.081
2118.	0.596	5118.	0.081
2121.	0.593	5121.	0.082
2124.	0.593	5124.	0.082
2127.	0.593	5127.	0.082
2130.	0.595	5130.	0.082
2133.	0.592	5133.	0.08
2136.	0.589	5136.	0.083
2139.	0.593	5139.	0.082
2142.	0.588	5142.	0.081
2145.	0.588	5145.	0.08
2148.	0.592	5148.	0.08
2151.	0.587	5151.	0.08
2154.	0.584	5154.	0.08
2157.	0.582	5157.	0.081
2160.	0.582	5160.	0.08
2163.	0.582	5163.	0.081
2166.	0.582	5166.	0.081
2169.	0.581	5169.	0.079
2172.	0.58	5172.	0.079
2175.	0.578	5175.	0.08
2178.	0.574	5178.	0.08
2181.	0.577	5181.	0.08
2184.	0.583	5184.	0.081
2187.	0.588	5187.	0.081
2190.	0.587	5190.	0.081
2193.	0.588	5193.	0.083
2196.	0.583	5196.	0.079
2199.	0.583	5199.	0.08
2202.	0.582	5202.	0.081
2205.	0.582	5205.	0.081
2208.	0.585	5208.	0.082
2211.	0.579	5211.	0.08
2214.	0.583	5214.	0.081
2217.	0.583	5217.	0.081
2220.	0.58	5220.	0.082
2223.	0.579	5223.	0.081
2226.	0.58	5226.	0.081
2229.	0.581	5229.	0.082
2232.	0.577	5232.	0.082
2235.	0.576	5235.	0.08
2238.	0.573	5238.	0.08
2241.	0.579	5241.	0.079
2244.	0.577	5244.	0.081
2247.	0.579	5247.	0.078
2250.	0.581	5250.	0.079
2253.	0.575	5253.	0.079
2256.	0.574	5256.	0.081
2259.	0.582	5259.	0.081
2262.	0.575	5262.	0.081
2265.	0.576	5265.	0.081
2268.	0.575	5268.	0.08
2271.	0.58	5271.	0.081
2274.	0.579	5274.	0.08
2277.	0.579	5277.	0.078
2280.	0.575	5280.	0.082
2283.	0.575	5283.	0.082

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2286.	0.579	5286.	0.079
2289.	0.575	5289.	0.077
2292.	0.577	5292.	0.077
2295.	0.58	5295.	0.077
2298.	0.581	5298.	0.077
2301.	0.574	5301.	0.077
2304.	0.575	5304.	0.079
2307.	0.572	5307.	0.078
2310.	0.576	5310.	0.078
2313.	0.574	5313.	0.078
2316.	0.575	5316.	0.079
2319.	0.575	5319.	0.078
2322.	0.574	5322.	0.078
2325.	0.577	5325.	0.077
2328.	0.575	5328.	0.079
2331.	0.573	5331.	0.077
2334.	0.574	5334.	0.077
2337.	0.57	5337.	0.076
2340.	0.57	5340.	0.075
2343.	0.573	5343.	0.076
2346.	0.573	5346.	0.077
2349.	0.569	5349.	0.075
2352.	0.568	5352.	0.076
2355.	0.57	5355.	0.076
2358.	0.569	5358.	0.076
2361.	0.568	5361.	0.078
2364.	0.571	5364.	0.077
2367.	0.568	5367.	0.077
2370.	0.568	5370.	0.078
2373.	0.569	5373.	0.077
2376.	0.566	5376.	0.078
2379.	0.566	5379.	0.078
2382.	0.568	5382.	0.078
2385.	0.565	5385.	0.079
2388.	0.567	5388.	0.078
2391.	0.567	5391.	0.077
2394.	0.567	5394.	0.077
2397.	0.567	5397.	0.079
2400.	0.566	5400.	0.081
2403.	0.567	5403.	0.079
2406.	0.563	5406.	0.081
2409.	0.564	5409.	0.081
2412.	0.562	5412.	0.08
2415.	0.561	5415.	0.082
2418.	0.567	5418.	0.081
2421.	0.565	5421.	0.081
2424.	0.566	5424.	0.082
2427.	0.567	5427.	0.081
2430.	0.567	5430.	0.079
2433.	0.565	5433.	0.081
2436.	0.563	5436.	0.082
2439.	0.564	5439.	0.082
2442.	0.565	5442.	0.082
2445.	0.564	5445.	0.081
2448.	0.566	5448.	0.08
2451.	0.564	5451.	0.08
2454.	0.568	5454.	0.08
2457.	0.568	5457.	0.08
2460.	0.566	5460.	0.082
2463.	0.564	5463.	0.08
2466.	0.565	5466.	0.083
2469.	0.562	5469.	0.081
2472.	0.566	5472.	0.082
2475.	0.565	5475.	0.078
2478.	0.564	5478.	0.077
2481.	0.562	5481.	0.08
2484.	0.564	5484.	0.078

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
2487.	0.565	5487.	0.08
2490.	0.562	5490.	0.078
2493.	0.562	5493.	0.08
2496.	0.563	5496.	0.081
2499.	0.562	5499.	0.082
2502.	0.564	5502.	0.08
2505.	0.562	5505.	0.082
2508.	0.559	5508.	0.083
2511.	0.563	5511.	0.082
2514.	0.562	5514.	0.083
2517.	0.564	5517.	0.082
2520.	0.562	5520.	0.08
2523.	0.567	5523.	0.083
2526.	0.563	5526.	0.085
2529.	0.563	5529.	0.083
2532.	0.564	5532.	0.083
2535.	0.565	5535.	0.083
2538.	0.562	5538.	0.087
2541.	0.563	5541.	0.089
2544.	0.562	5544.	0.086
2547.	0.563	5547.	0.088
2550.	0.561	5550.	0.086
2553.	0.558	5553.	0.082
2556.	0.558	5556.	0.085
2559.	0.56	5559.	0.085
2562.	0.559	5562.	0.084
2565.	0.562	5565.	0.086
2568.	0.562	5568.	0.089
2571.	0.56	5571.	0.089
2574.	0.56	5574.	0.088
2577.	0.56	5577.	0.087
2580.	0.561	5580.	0.086
2583.	0.56	5583.	0.088
2586.	0.559	5586.	0.087
2589.	0.563	5589.	0.087
2592.	0.562	5592.	0.09
2595.	0.563	5595.	0.09
2598.	0.564	5598.	0.088
2601.	0.563	5601.	0.092
2604.	0.565	5604.	0.094
2607.	0.561	5607.	0.091
2610.	0.563	5610.	0.095
2613.	0.561	5613.	0.092
2616.	0.564	5616.	0.094
2619.	0.563	5619.	0.095
2622.	0.561	5622.	0.086
2625.	0.563	5625.	0.096
2628.	0.565	5628.	0.087
2631.	0.562	5631.	0.09
2634.	0.561	5634.	0.094
2637.	0.565	5637.	0.091
2640.	0.561	5640.	0.09
2643.	0.561	5643.	0.09
2646.	0.562	5646.	0.09
2649.	0.56	5649.	0.091
2652.	0.56	5652.	0.09
2655.	0.562	5655.	0.087
2658.	0.561	5658.	0.093
2661.	0.558	5661.	0.092
2664.	0.562	5664.	0.089
2667.	0.555	5667.	0.091
2670.	0.556	5670.	0.09
2673.	0.557	5673.	0.094
2676.	0.556	5676.	0.092
2679.	0.557	5679.	0.091
2682.	0.557	5682.	0.09
2685.	0.561	5685.	0.092

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2688.	0.562	5688.	0.094
2691.	0.558	5691.	0.096
2694.	0.558	5694.	0.093
2697.	0.557	5697.	0.093
2700.	0.558	5700.	0.092
2703.	0.558	5703.	0.097
2706.	0.557	5706.	0.096
2709.	0.557	5709.	0.095
2712.	0.555	5712.	0.095
2715.	0.554	5715.	0.095
2718.	0.555	5718.	0.094
2721.	0.554	5721.	0.096
2724.	0.555	5724.	0.094
2727.	0.558	5727.	0.097
2730.	0.562	5730.	0.098
2733.	0.558	5733.	0.099
2736.	0.56	5736.	0.098
2739.	0.559	5739.	0.098
2742.	0.557	5742.	0.099
2745.	0.559	5745.	0.099
2748.	0.563	5748.	0.096
2751.	0.561	5751.	0.097
2754.	0.56	5754.	0.098
2757.	0.559	5757.	0.1
2760.	0.561	5760.	0.1
2763.	0.56	5763.	0.099
2766.	0.561	5766.	0.101
2769.	0.557	5769.	0.104
2772.	0.558	5772.	0.099
2775.	0.56	5775.	0.1
2778.	0.561	5778.	0.1
2781.	0.559	5781.	0.099
2784.	0.56	5784.	0.102
2787.	0.56	5787.	0.102
2790.	0.559	5790.	0.099
2793.	0.56	5793.	0.104
2796.	0.558	5796.	0.101
2799.	0.56	5799.	0.103
2802.	0.56	5802.	0.1
2805.	0.558	5805.	0.102
2808.	0.559	5808.	0.103
2811.	0.56	5811.	0.103
2814.	0.56	5814.	0.103
2817.	0.558	5817.	0.101
2820.	0.56	5820.	0.102
2823.	0.558	5823.	0.098
2826.	0.558	5826.	0.095
2829.	0.558	5829.	0.098
2832.	0.557	5832.	0.099
2835.	0.557	5835.	0.098
2838.	0.555	5838.	0.098
2841.	0.555	5841.	0.098
2844.	0.555	5844.	0.101
2847.	0.553	5847.	0.103
2850.	0.551	5850.	0.093
2853.	0.549	5853.	0.094
2856.	0.553	5856.	0.099
2859.	0.551	5859.	0.103
2862.	0.548	5862.	0.095
2865.	0.549	5865.	0.094
2868.	0.55	5868.	0.099
2871.	0.551	5871.	0.1
2874.	0.549	5874.	0.098
2877.	0.546	5877.	0.099
2880.	0.547	5880.	0.097
2883.	0.545	5883.	0.097
2886.	0.547	5886.	0.098

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2889.	0.547	5889.	0.099
2892.	0.547	5892.	0.098
2895.	0.548	5895.	0.097
2898.	0.548	5898.	0.098
2901.	0.544	5901.	0.101
2904.	0.549	5904.	0.102
2907.	0.547	5907.	0.103
2910.	0.548	5910.	0.102
2913.	0.547	5913.	0.101
2916.	0.549	5916.	0.103
2919.	0.548	5919.	0.102
2922.	0.551	5922.	0.104
2925.	0.55	5925.	0.103
2928.	0.546	5928.	0.103
2931.	0.55	5931.	0.104
2934.	0.545	5934.	0.106
2937.	0.556	5937.	0.102
2940.	0.554	5940.	0.101
2943.	0.549	5943.	0.104
2946.	0.553	5946.	0.104
2949.	0.551	5949.	0.106
2952.	0.553	5952.	0.104
2955.	0.553	5955.	0.105
2958.	0.553	5958.	0.105
2961.	0.556	5961.	0.104
2964.	0.55	5964.	0.103
2967.	0.552	5967.	0.103
2970.	0.553	5970.	0.101
2973.	0.552	5973.	0.102
2976.	0.549	5976.	0.102
2979.	0.548	5979.	0.101
2982.	0.551	5982.	0.101
2985.	0.548	5985.	0.101
2988.	0.556	5988.	0.101
2991.	0.553	5991.	0.1
2994.	0.556	5994.	0.098
2997.	0.551	5997.	0.097
3000.	0.555	6000.	0.098

Observation Well No. 4: PZ-NY-02-01

X Location: 0. ft  
Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 2000

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.	0.001	3003.	0.304
6.	0.002	3006.	0.306
9.	0.001	3009.	0.306
12.	0.001	3012.	0.305
15.	0.002	3015.	0.311
18.	0.001	3018.	0.307
21.	0.	3021.	0.309
24.	0.002	3024.	0.307
27.	0.039	3027.	0.31
30.	0.05	3030.	0.311
33.	0.376	3033.	0.313
36.	0.355	3036.	0.31
39.	0.351	3039.	0.308
42.	0.351	3042.	0.312
45.	0.356	3045.	0.312

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
48.	0.359	3048.	0.311
51.	0.362	3051.	0.311
54.	0.364	3054.	0.313
57.	0.368	3057.	0.311
60.	0.365	3060.	0.314
63.	0.369	3063.	0.313
66.	0.369	3066.	0.313
69.	0.371	3069.	0.315
72.	0.374	3072.	0.314
75.	0.378	3075.	0.308
78.	0.379	3078.	0.313
81.	0.38	3081.	0.309
84.	0.326	3084.	0.313
87.	0.337	3087.	0.309
90.	0.339	3090.	0.31
93.	0.339	3093.	0.311
96.	0.339	3096.	0.308
99.	0.339	3099.	0.308
102.	0.34	3102.	0.306
105.	0.341	3105.	0.307
108.	0.343	3108.	0.303
111.	0.345	3111.	0.301
114.	0.346	3114.	0.307
117.	0.345	3117.	0.303
120.	0.344	3120.	0.304
123.	0.346	3123.	0.303
126.	0.349	3126.	0.299
129.	0.347	3129.	0.298
132.	0.353	3132.	0.298
135.	0.351	3135.	0.296
138.	0.349	3138.	0.297
141.	0.343	3141.	0.296
144.	0.347	3144.	0.299
147.	0.349	3147.	0.297
150.	0.35	3150.	0.299
153.	0.348	3153.	0.301
156.	0.348	3156.	0.3
159.	0.349	3159.	0.295
162.	0.352	3162.	0.3
165.	0.349	3165.	0.302
168.	0.348	3168.	0.298
171.	0.346	3171.	0.293
174.	0.343	3174.	0.291
177.	0.34	3177.	0.29
180.	0.341	3180.	0.289
183.	0.339	3183.	0.291
186.	0.339	3186.	0.289
189.	0.338	3189.	0.287
192.	0.336	3192.	0.287
195.	0.335	3195.	0.29
198.	0.337	3198.	0.289
201.	0.336	3201.	0.291
204.	0.338	3204.	0.289
207.	0.336	3207.	0.289
210.	0.336	3210.	0.291
213.	0.337	3213.	0.292
216.	0.337	3216.	0.29
219.	0.338	3219.	0.288
222.	0.34	3222.	0.287
225.	0.339	3225.	0.292
228.	0.339	3228.	0.291
231.	0.347	3231.	0.292
234.	0.438	3234.	0.288
237.	0.466	3237.	0.29
240.	0.48	3240.	0.29
243.	0.48	3243.	0.291
246.	0.479	3246.	0.292

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
249.	0.484	3249.	0.298
252.	0.485	3252.	0.297
255.	0.484	3255.	0.295
258.	0.486	3258.	0.291
261.	0.482	3261.	0.292
264.	0.48	3264.	0.294
267.	0.481	3267.	0.295
270.	0.484	3270.	0.294
273.	0.484	3273.	0.294
276.	0.482	3276.	0.292
279.	0.485	3279.	0.301
282.	0.487	3282.	0.295
285.	0.486	3285.	0.294
288.	0.487	3288.	0.29
291.	0.489	3291.	0.291
294.	0.489	3294.	0.294
297.	0.49	3297.	0.29
300.	0.491	3300.	0.292
303.	0.492	3303.	0.288
306.	0.492	3306.	0.287
309.	0.491	3309.	0.284
312.	0.491	3312.	0.286
315.	0.489	3315.	0.288
318.	0.487	3318.	0.29
321.	0.488	3321.	0.289
324.	0.49	3324.	0.287
327.	0.488	3327.	0.288
330.	0.488	3330.	0.291
333.	0.492	3333.	0.292
336.	0.49	3336.	0.29
339.	0.495	3339.	0.293
342.	0.492	3342.	0.289
345.	0.494	3345.	0.291
348.	0.494	3348.	0.286
351.	0.495	3351.	0.293
354.	0.496	3354.	0.292
357.	0.495	3357.	0.291
360.	0.497	3360.	0.294
363.	0.497	3363.	0.294
366.	0.498	3366.	0.292
369.	0.5	3369.	0.294
372.	0.501	3372.	0.295
375.	0.502	3375.	0.3
378.	0.502	3378.	0.299
381.	0.502	3381.	0.297
384.	0.502	3384.	0.299
387.	0.503	3387.	0.3
390.	0.505	3390.	0.299
393.	0.506	3393.	0.299
396.	0.508	3396.	0.297
399.	0.507	3399.	0.297
402.	0.507	3402.	0.298
405.	0.507	3405.	0.296
408.	0.508	3408.	0.294
411.	0.511	3411.	0.297
414.	0.511	3414.	0.297
417.	0.512	3417.	0.294
420.	0.511	3420.	0.294
423.	0.514	3423.	0.295
426.	0.511	3426.	0.296
429.	0.512	3429.	0.297
432.	0.515	3432.	0.293
435.	0.517	3435.	0.293
438.	0.514	3438.	0.295
441.	0.512	3441.	0.293
444.	0.512	3444.	0.293
447.	0.513	3447.	0.293

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
450.	0.512	3450.	0.293
453.	0.51	3453.	0.294
456.	0.508	3456.	0.29
459.	0.504	3459.	0.292
462.	0.504	3462.	0.293
465.	0.502	3465.	0.292
468.	0.502	3468.	0.292
471.	0.5	3471.	0.29
474.	0.499	3474.	0.289
477.	0.5	3477.	0.289
480.	0.497	3480.	0.29
483.	0.497	3483.	0.291
486.	0.491	3486.	0.29
489.	0.487	3489.	0.293
492.	0.484	3492.	0.29
495.	0.482	3495.	0.29
498.	0.482	3498.	0.295
501.	0.481	3501.	0.292
504.	0.478	3504.	0.293
507.	0.474	3507.	0.293
510.	0.47	3510.	0.291
513.	0.469	3513.	0.295
516.	0.467	3516.	0.295
519.	0.465	3519.	0.295
522.	0.467	3522.	0.295
525.	0.466	3525.	0.292
528.	0.463	3528.	0.289
531.	0.464	3531.	0.29
534.	0.461	3534.	0.286
537.	0.458	3537.	0.29
540.	0.461	3540.	0.289
543.	0.458	3543.	0.293
546.	0.458	3546.	0.289
549.	0.456	3549.	0.289
552.	0.455	3552.	0.283
555.	0.456	3555.	0.287
558.	0.464	3558.	0.289
561.	0.462	3561.	0.292
564.	0.464	3564.	0.294
567.	0.461	3567.	0.291
570.	0.461	3570.	0.292
573.	0.461	3573.	0.292
576.	0.459	3576.	0.294
579.	0.461	3579.	0.293
582.	0.46	3582.	0.297
585.	0.459	3585.	0.295
588.	0.457	3588.	0.292
591.	0.456	3591.	0.292
594.	0.459	3594.	0.296
597.	0.459	3597.	0.295
600.	0.456	3600.	0.295
603.	0.457	3603.	0.296
606.	0.455	3606.	0.296
609.	0.456	3609.	0.296
612.	0.454	3612.	0.297
615.	0.451	3615.	0.294
618.	0.452	3618.	0.296
621.	0.454	3621.	0.292
624.	0.456	3624.	0.293
627.	0.456	3627.	0.297
630.	0.454	3630.	0.292
633.	0.453	3633.	0.288
636.	0.451	3636.	0.286
639.	0.451	3639.	0.287
642.	0.448	3642.	0.29
645.	0.448	3645.	0.286
648.	0.442	3648.	0.288

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
651.	0.443	3651.	0.288
654.	0.441	3654.	0.287
657.	0.441	3657.	0.291
660.	0.439	3660.	0.291
663.	0.438	3663.	0.289
666.	0.437	3666.	0.292
669.	0.438	3669.	0.291
672.	0.436	3672.	0.29
675.	0.436	3675.	0.293
678.	0.433	3678.	0.293
681.	0.429	3681.	0.292
684.	0.432	3684.	0.294
687.	0.43	3687.	0.289
690.	0.428	3690.	0.291
693.	0.427	3693.	0.288
696.	0.423	3696.	0.288
699.	0.422	3699.	0.29
702.	0.421	3702.	0.281
705.	0.421	3705.	0.278
708.	0.421	3708.	0.277
711.	0.416	3711.	0.277
714.	0.417	3714.	0.274
717.	0.416	3717.	0.274
720.	0.416	3720.	0.276
723.	0.416	3723.	0.274
726.	0.415	3726.	0.274
729.	0.416	3729.	0.275
732.	0.415	3732.	0.274
735.	0.414	3735.	0.278
738.	0.414	3738.	0.275
741.	0.414	3741.	0.275
744.	0.415	3744.	0.276
747.	0.414	3747.	0.278
750.	0.413	3750.	0.281
753.	0.413	3753.	0.28
756.	0.413	3756.	0.28
759.	0.415	3759.	0.278
762.	0.414	3762.	0.283
765.	0.413	3765.	0.279
768.	0.414	3768.	0.282
771.	0.415	3771.	0.279
774.	0.414	3774.	0.279
777.	0.414	3777.	0.284
780.	0.416	3780.	0.28
783.	0.412	3783.	0.28
786.	0.413	3786.	0.282
789.	0.414	3789.	0.278
792.	0.411	3792.	0.279
795.	0.41	3795.	0.278
798.	0.41	3798.	0.279
801.	0.413	3801.	0.278
804.	0.413	3804.	0.283
807.	0.409	3807.	0.278
810.	0.41	3810.	0.277
813.	0.409	3813.	0.277
816.	0.409	3816.	0.279
819.	0.41	3819.	0.28
822.	0.41	3822.	0.279
825.	0.409	3825.	0.28
828.	0.407	3828.	0.278
831.	0.405	3831.	0.278
834.	0.406	3834.	0.277
837.	0.406	3837.	0.276
840.	0.402	3840.	0.278
843.	0.404	3843.	0.28
846.	0.403	3846.	0.279
849.	0.399	3849.	0.278

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
852.	0.403	3852.	0.281
855.	0.397	3855.	0.279
858.	0.397	3858.	0.28
861.	0.396	3861.	0.28
864.	0.393	3864.	0.282
867.	0.391	3867.	0.281
870.	0.388	3870.	0.283
873.	0.387	3873.	0.283
876.	0.387	3876.	0.285
879.	0.384	3879.	0.283
882.	0.383	3882.	0.286
885.	0.382	3885.	0.282
888.	0.381	3888.	0.286
891.	0.382	3891.	0.282
894.	0.382	3894.	0.28
897.	0.381	3897.	0.281
900.	0.379	3900.	0.28
903.	0.379	3903.	0.278
906.	0.379	3906.	0.28
909.	0.38	3909.	0.282
912.	0.378	3912.	0.281
915.	0.376	3915.	0.283
918.	0.375	3918.	0.285
921.	0.377	3921.	0.284
924.	0.378	3924.	0.285
927.	0.379	3927.	0.285
930.	0.381	3930.	0.286
933.	0.382	3933.	0.286
936.	0.384	3936.	0.285
939.	0.384	3939.	0.286
942.	0.385	3942.	0.287
945.	0.387	3945.	0.285
948.	0.386	3948.	0.289
951.	0.384	3951.	0.287
954.	0.385	3954.	0.292
957.	0.384	3957.	0.286
960.	0.385	3960.	0.286
963.	0.385	3963.	0.287
966.	0.383	3966.	0.284
969.	0.383	3969.	0.279
972.	0.387	3972.	0.277
975.	0.383	3975.	0.28
978.	0.382	3978.	0.28
981.	0.38	3981.	0.282
984.	0.381	3984.	0.282
987.	0.383	3987.	0.285
990.	0.386	3990.	0.286
993.	0.38	3993.	0.285
996.	0.381	3996.	0.289
999.	0.384	3999.	0.288
1002.	0.382	4002.	0.289
1005.	0.384	4005.	0.289
1008.	0.385	4008.	0.289
1011.	0.382	4011.	0.291
1014.	0.385	4014.	0.29
1017.	0.384	4017.	0.292
1020.	0.382	4020.	0.295
1023.	0.382	4023.	0.293
1026.	0.383	4026.	0.293
1029.	0.385	4029.	0.292
1032.	0.382	4032.	0.292
1035.	0.386	4035.	0.292
1038.	0.381	4038.	0.29
1041.	0.382	4041.	0.292
1044.	0.379	4044.	0.293
1047.	0.376	4047.	0.291
1050.	0.372	4050.	0.294

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1053.	0.374	4053.	0.293
1056.	0.37	4056.	0.294
1059.	0.368	4059.	0.294
1062.	0.366	4062.	0.295
1065.	0.366	4065.	0.295
1068.	0.363	4068.	0.293
1071.	0.362	4071.	0.295
1074.	0.357	4074.	0.294
1077.	0.361	4077.	0.294
1080.	0.362	4080.	0.294
1083.	0.355	4083.	0.294
1086.	0.36	4086.	0.294
1089.	0.362	4089.	0.294
1092.	0.36	4092.	0.293
1095.	0.358	4095.	0.295
1098.	0.359	4098.	0.293
1101.	0.359	4101.	0.293
1104.	0.36	4104.	0.293
1107.	0.352	4107.	0.292
1110.	0.357	4110.	0.292
1113.	0.359	4113.	0.291
1116.	0.359	4116.	0.288
1119.	0.36	4119.	0.289
1122.	0.361	4122.	0.288
1125.	0.36	4125.	0.287
1128.	0.36	4128.	0.284
1131.	0.359	4131.	0.288
1134.	0.362	4134.	0.289
1137.	0.365	4137.	0.287
1140.	0.367	4140.	0.288
1143.	0.364	4143.	0.288
1146.	0.364	4146.	0.291
1149.	0.367	4149.	0.289
1152.	0.368	4152.	0.285
1155.	0.37	4155.	0.288
1158.	0.37	4158.	0.289
1161.	0.369	4161.	0.294
1164.	0.371	4164.	0.292
1167.	0.369	4167.	0.295
1170.	0.369	4170.	0.294
1173.	0.368	4173.	0.288
1176.	0.371	4176.	0.288
1179.	0.369	4179.	0.288
1182.	0.37	4182.	0.288
1185.	0.37	4185.	0.29
1188.	0.371	4188.	0.288
1191.	0.372	4191.	0.293
1194.	0.369	4194.	0.292
1197.	0.37	4197.	0.295
1200.	0.368	4200.	0.295
1203.	0.368	4203.	0.293
1206.	0.37	4206.	0.293
1209.	0.372	4209.	0.296
1212.	0.372	4212.	0.295
1215.	0.372	4215.	0.293
1218.	0.358	4218.	0.294
1221.	0.363	4221.	0.295
1224.	0.363	4224.	0.294
1227.	0.361	4227.	0.297
1230.	0.365	4230.	0.298
1233.	0.365	4233.	0.301
1236.	0.361	4236.	0.3
1239.	0.36	4239.	0.301
1242.	0.36	4242.	0.301
1245.	0.356	4245.	0.298
1248.	0.357	4248.	0.299
1251.	0.356	4251.	0.297

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1254.	0.36	4254.	0.295
1257.	0.362	4257.	0.298
1260.	0.367	4260.	0.296
1263.	0.366	4263.	0.295
1266.	0.365	4266.	0.293
1269.	0.364	4269.	0.294
1272.	0.361	4272.	0.297
1275.	0.366	4275.	0.293
1278.	0.364	4278.	0.291
1281.	0.367	4281.	0.293
1284.	0.365	4284.	0.293
1287.	0.366	4287.	0.294
1290.	0.368	4290.	0.294
1293.	0.367	4293.	0.291
1296.	0.369	4296.	0.291
1299.	0.365	4299.	0.291
1302.	0.358	4302.	0.29
1305.	0.352	4305.	0.29
1308.	0.346	4308.	0.289
1311.	0.348	4311.	0.288
1314.	0.351	4314.	0.288
1317.	0.351	4317.	0.287
1320.	0.352	4320.	0.287
1323.	0.35	4323.	0.288
1326.	0.352	4326.	0.289
1329.	0.349	4329.	0.287
1332.	0.354	4332.	0.29
1335.	0.355	4335.	0.29
1338.	0.354	4338.	0.284
1341.	0.349	4341.	0.287
1344.	0.347	4344.	0.29
1347.	0.343	4347.	0.289
1350.	0.342	4350.	0.29
1353.	0.342	4353.	0.291
1356.	0.34	4356.	0.292
1359.	0.34	4359.	0.289
1362.	0.339	4362.	0.289
1365.	0.338	4365.	0.165
1368.	0.339	4368.	0.042
1371.	0.341	4371.	0.017
1374.	0.341	4374.	0.009
1377.	0.343	4377.	0.005
1380.	0.342	4380.	0.006
1383.	0.346	4383.	0.004
1386.	0.345	4386.	0.005
1389.	0.342	4389.	0.004
1392.	0.341	4392.	0.001
1395.	0.341	4395.	0.001
1398.	0.341	4398.	0.013
1401.	0.34	4401.	0.005
1404.	0.341	4404.	0.003
1407.	0.341	4407.	0.001
1410.	0.341	4410.	0.001
1413.	0.343	4413.	0.001
1416.	0.344	4416.	0.004
1419.	0.345	4419.	0.005
1422.	0.343	4422.	0.003
1425.	0.345	4425.	0.001
1428.	0.342	4428.	0.003
1431.	0.343	4431.	0.004
1434.	0.343	4434.	0.007
1437.	0.345	4437.	0.006
1440.	0.344	4440.	0.003
1443.	0.344	4443.	0.006
1446.	0.342	4446.	0.008
1449.	0.344	4449.	0.01
1452.	0.342	4452.	0.009

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1455.	0.344	4455.	0.013
1458.	0.343	4458.	0.015
1461.	0.34	4461.	0.013
1464.	0.34	4464.	0.014
1467.	0.342	4467.	0.017
1470.	0.342	4470.	0.018
1473.	0.34	4473.	0.017
1476.	0.339	4476.	0.017
1479.	0.338	4479.	0.017
1482.	0.34	4482.	0.02
1485.	0.336	4485.	0.02
1488.	0.336	4488.	0.019
1491.	0.336	4491.	0.021
1494.	0.346	4494.	0.019
1497.	0.337	4497.	0.019
1500.	0.338	4500.	0.02
1503.	0.336	4503.	0.022
1506.	0.335	4506.	0.022
1509.	0.338	4509.	0.023
1512.	0.336	4512.	0.022
1515.	0.333	4515.	0.025
1518.	0.334	4518.	0.024
1521.	0.334	4521.	0.026
1524.	0.332	4524.	0.025
1527.	0.332	4527.	0.026
1530.	0.334	4530.	0.026
1533.	0.334	4533.	0.025
1536.	0.332	4536.	0.028
1539.	0.333	4539.	0.027
1542.	0.332	4542.	0.027
1545.	0.332	4545.	0.027
1548.	0.332	4548.	0.026
1551.	0.337	4551.	0.027
1554.	0.336	4554.	0.027
1557.	0.336	4557.	0.027
1560.	0.337	4560.	0.027
1563.	0.338	4563.	0.023
1566.	0.34	4566.	0.026
1569.	0.338	4569.	0.025
1572.	0.337	4572.	0.026
1575.	0.341	4575.	0.026
1578.	0.342	4578.	0.026
1581.	0.342	4581.	0.027
1584.	0.341	4584.	0.026
1587.	0.341	4587.	0.025
1590.	0.342	4590.	0.027
1593.	0.339	4593.	0.026
1596.	0.339	4596.	0.025
1599.	0.341	4599.	0.024
1602.	0.341	4602.	0.025
1605.	0.343	4605.	0.026
1608.	0.341	4608.	0.024
1611.	0.343	4611.	0.026
1614.	0.346	4614.	0.025
1617.	0.342	4617.	0.026
1620.	0.341	4620.	0.024
1623.	0.342	4623.	0.024
1626.	0.34	4626.	0.024
1629.	0.341	4629.	0.025
1632.	0.341	4632.	0.024
1635.	0.341	4635.	0.025
1638.	0.341	4638.	0.026
1641.	0.344	4641.	0.028
1644.	0.34	4644.	0.027
1647.	0.34	4647.	0.028
1650.	0.338	4650.	0.029
1653.	0.34	4653.	0.028

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1656.	0.34	4656.	0.028
1659.	0.34	4659.	0.03
1662.	0.343	4662.	0.03
1665.	0.34	4665.	0.031
1668.	0.339	4668.	0.029
1671.	0.339	4671.	0.03
1674.	0.337	4674.	0.028
1677.	0.338	4677.	0.027
1680.	0.338	4680.	0.025
1683.	0.339	4683.	0.024
1686.	0.34	4686.	0.026
1689.	0.343	4689.	0.026
1692.	0.341	4692.	0.027
1695.	0.341	4695.	0.026
1698.	0.343	4698.	0.026
1701.	0.344	4701.	0.025
1704.	0.347	4704.	0.026
1707.	0.347	4707.	0.023
1710.	0.349	4710.	0.023
1713.	0.349	4713.	0.023
1716.	0.347	4716.	0.023
1719.	0.347	4719.	0.025
1722.	0.347	4722.	0.023
1725.	0.351	4725.	0.025
1728.	0.35	4728.	0.023
1731.	0.348	4731.	0.023
1734.	0.35	4734.	0.024
1737.	0.35	4737.	0.022
1740.	0.35	4740.	0.022
1743.	0.351	4743.	0.023
1746.	0.352	4746.	0.023
1749.	0.355	4749.	0.021
1752.	0.353	4752.	0.021
1755.	0.354	4755.	0.02
1758.	0.352	4758.	0.02
1761.	0.352	4761.	0.019
1764.	0.352	4764.	0.019
1767.	0.352	4767.	0.02
1770.	0.353	4770.	0.017
1773.	0.353	4773.	0.019
1776.	0.351	4776.	0.021
1779.	0.351	4779.	0.022
1782.	0.35	4782.	0.02
1785.	0.348	4785.	0.021
1788.	0.35	4788.	0.023
1791.	0.35	4791.	0.021
1794.	0.352	4794.	0.024
1797.	0.351	4797.	0.022
1800.	0.353	4800.	0.024
1803.	0.354	4803.	0.023
1806.	0.353	4806.	0.022
1809.	0.352	4809.	0.025
1812.	0.354	4812.	0.025
1815.	0.346	4815.	0.027
1818.	0.351	4818.	0.023
1821.	0.35	4821.	0.023
1824.	0.35	4824.	0.026
1827.	0.35	4827.	0.026
1830.	0.35	4830.	0.026
1833.	0.351	4833.	0.026
1836.	0.349	4836.	0.026
1839.	0.35	4839.	0.026
1842.	0.351	4842.	0.026
1845.	0.351	4845.	0.026
1848.	0.349	4848.	0.026
1851.	0.351	4851.	0.024
1854.	0.349	4854.	0.024

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1857.	0.346	4857.	0.024
1860.	0.346	4860.	0.025
1863.	0.345	4863.	0.023
1866.	0.343	4866.	0.024
1869.	0.343	4869.	0.022
1872.	0.343	4872.	0.022
1875.	0.344	4875.	0.023
1878.	0.342	4878.	0.022
1881.	0.334	4881.	0.021
1884.	0.334	4884.	0.019
1887.	0.335	4887.	0.02
1890.	0.332	4890.	0.019
1893.	0.335	4893.	0.018
1896.	0.335	4896.	0.016
1899.	0.336	4899.	0.016
1902.	0.337	4902.	0.016
1905.	0.338	4905.	0.017
1908.	0.337	4908.	0.017
1911.	0.339	4911.	0.016
1914.	0.341	4914.	0.015
1917.	0.343	4917.	0.014
1920.	0.344	4920.	0.016
1923.	0.342	4923.	0.016
1926.	0.34	4926.	0.02
1929.	0.341	4929.	0.018
1932.	0.343	4932.	0.02
1935.	0.344	4935.	0.019
1938.	0.347	4938.	0.02
1941.	0.345	4941.	0.02
1944.	0.346	4944.	0.02
1947.	0.345	4947.	0.021
1950.	0.339	4950.	0.021
1953.	0.339	4953.	0.022
1956.	0.341	4956.	0.021
1959.	0.342	4959.	0.023
1962.	0.343	4962.	0.023
1965.	0.343	4965.	0.023
1968.	0.341	4968.	0.022
1971.	0.344	4971.	0.023
1974.	0.347	4974.	0.024
1977.	0.352	4977.	0.024
1980.	0.351	4980.	0.025
1983.	0.347	4983.	0.026
1986.	0.345	4986.	0.025
1989.	0.349	4989.	0.026
1992.	0.348	4992.	0.027
1995.	0.348	4995.	0.024
1998.	0.348	4998.	0.028
2001.	0.346	5001.	0.026
2004.	0.347	5004.	0.027
2007.	0.344	5007.	0.028
2010.	0.344	5010.	0.027
2013.	0.344	5013.	0.026
2016.	0.345	5016.	0.026
2019.	0.349	5019.	0.027
2022.	0.346	5022.	0.028
2025.	0.345	5025.	0.027
2028.	0.342	5028.	0.024
2031.	0.346	5031.	0.025
2034.	0.344	5034.	0.024
2037.	0.343	5037.	0.025
2040.	0.346	5040.	0.026
2043.	0.343	5043.	0.024
2046.	0.338	5046.	0.024
2049.	0.34	5049.	0.023
2052.	0.34	5052.	0.023
2055.	0.339	5055.	0.023

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2058.	0.342	5058.	0.023
2061.	0.341	5061.	0.023
2064.	0.34	5064.	0.023
2067.	0.341	5067.	0.025
2070.	0.341	5070.	0.027
2073.	0.337	5073.	0.026
2076.	0.334	5076.	0.027
2079.	0.336	5079.	0.029
2082.	0.333	5082.	0.029
2085.	0.335	5085.	0.029
2088.	0.336	5088.	0.03
2091.	0.336	5091.	0.032
2094.	0.339	5094.	0.032
2097.	0.342	5097.	0.03
2100.	0.338	5100.	0.03
2103.	0.339	5103.	0.032
2106.	0.34	5106.	0.03
2109.	0.339	5109.	0.03
2112.	0.34	5112.	0.032
2115.	0.34	5115.	0.031
2118.	0.339	5118.	0.032
2121.	0.34	5121.	0.032
2124.	0.342	5124.	0.033
2127.	0.34	5127.	0.031
2130.	0.337	5130.	0.034
2133.	0.338	5133.	0.032
2136.	0.332	5136.	0.032
2139.	0.335	5139.	0.035
2142.	0.333	5142.	0.033
2145.	0.334	5145.	0.037
2148.	0.333	5148.	0.035
2151.	0.33	5151.	0.035
2154.	0.329	5154.	0.035
2157.	0.327	5157.	0.035
2160.	0.329	5160.	0.034
2163.	0.33	5163.	0.036
2166.	0.327	5166.	0.033
2169.	0.324	5169.	0.037
2172.	0.319	5172.	0.037
2175.	0.318	5175.	0.036
2178.	0.32	5178.	0.033
2181.	0.319	5181.	0.036
2184.	0.322	5184.	0.033
2187.	0.321	5187.	0.032
2190.	0.32	5190.	0.034
2193.	0.318	5193.	0.033
2196.	0.315	5196.	0.031
2199.	0.317	5199.	0.034
2202.	0.311	5202.	0.032
2205.	0.311	5205.	0.032
2208.	0.312	5208.	0.034
2211.	0.314	5211.	0.034
2214.	0.315	5214.	0.036
2217.	0.312	5217.	0.036
2220.	0.312	5220.	0.034
2223.	0.314	5223.	0.036
2226.	0.313	5226.	0.035
2229.	0.315	5229.	0.034
2232.	0.312	5232.	0.035
2235.	0.311	5235.	0.037
2238.	0.316	5238.	0.037
2241.	0.318	5241.	0.036
2244.	0.316	5244.	0.037
2247.	0.317	5247.	0.037
2250.	0.302	5250.	0.037
2253.	0.302	5253.	0.038
2256.	0.309	5256.	0.038

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2259.	0.306	5259.	0.035
2262.	0.304	5262.	0.036
2265.	0.301	5265.	0.038
2268.	0.309	5268.	0.037
2271.	0.302	5271.	0.036
2274.	0.307	5274.	0.038
2277.	0.305	5277.	0.039
2280.	0.303	5280.	0.039
2283.	0.306	5283.	0.039
2286.	0.304	5286.	0.039
2289.	0.304	5289.	0.042
2292.	0.305	5292.	0.042
2295.	0.308	5295.	0.041
2298.	0.309	5298.	0.042
2301.	0.303	5301.	0.041
2304.	0.305	5304.	0.041
2307.	0.309	5307.	0.041
2310.	0.306	5310.	0.042
2313.	0.307	5313.	0.041
2316.	0.307	5316.	0.042
2319.	0.308	5319.	0.043
2322.	0.308	5322.	0.043
2325.	0.313	5325.	0.041
2328.	0.309	5328.	0.043
2331.	0.309	5331.	0.043
2334.	0.306	5334.	0.043
2337.	0.305	5337.	0.042
2340.	0.303	5340.	0.044
2343.	0.302	5343.	0.045
2346.	0.306	5346.	0.044
2349.	0.303	5349.	0.045
2352.	0.303	5352.	0.043
2355.	0.303	5355.	0.043
2358.	0.305	5358.	0.045
2361.	0.304	5361.	0.044
2364.	0.302	5364.	0.044
2367.	0.305	5367.	0.041
2370.	0.303	5370.	0.043
2373.	0.303	5373.	0.043
2376.	0.301	5376.	0.043
2379.	0.302	5379.	0.043
2382.	0.303	5382.	0.04
2385.	0.303	5385.	0.042
2388.	0.301	5388.	0.041
2391.	0.303	5391.	0.042
2394.	0.301	5394.	0.038
2397.	0.303	5397.	0.041
2400.	0.302	5400.	0.04
2403.	0.301	5403.	0.041
2406.	0.301	5406.	0.038
2409.	0.298	5409.	0.039
2412.	0.301	5412.	0.039
2415.	0.302	5415.	0.037
2418.	0.301	5418.	0.039
2421.	0.303	5421.	0.039
2424.	0.305	5424.	0.037
2427.	0.308	5427.	0.039
2430.	0.306	5430.	0.035
2433.	0.306	5433.	0.038
2436.	0.306	5436.	0.039
2439.	0.306	5439.	0.037
2442.	0.307	5442.	0.038
2445.	0.308	5445.	0.042
2448.	0.308	5448.	0.039
2451.	0.312	5451.	0.039
2454.	0.312	5454.	0.041
2457.	0.312	5457.	0.04

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2460.	0.307	5460.	0.04
2463.	0.309	5463.	0.038
2466.	0.309	5466.	0.04
2469.	0.309	5469.	0.038
2472.	0.309	5472.	0.04
2475.	0.309	5475.	0.039
2478.	0.307	5478.	0.039
2481.	0.307	5481.	0.039
2484.	0.308	5484.	0.041
2487.	0.312	5487.	0.04
2490.	0.311	5490.	0.04
2493.	0.31	5493.	0.04
2496.	0.31	5496.	0.038
2499.	0.313	5499.	0.039
2502.	0.311	5502.	0.038
2505.	0.308	5505.	0.04
2508.	0.307	5508.	0.037
2511.	0.308	5511.	0.035
2514.	0.31	5514.	0.037
2517.	0.311	5517.	0.036
2520.	0.312	5520.	0.036
2523.	0.313	5523.	0.034
2526.	0.313	5526.	0.035
2529.	0.313	5529.	0.036
2532.	0.312	5532.	0.037
2535.	0.312	5535.	0.035
2538.	0.312	5538.	0.034
2541.	0.312	5541.	0.038
2544.	0.309	5544.	0.036
2547.	0.31	5547.	0.034
2550.	0.309	5550.	0.035
2553.	0.308	5553.	0.035
2556.	0.308	5556.	0.033
2559.	0.306	5559.	0.033
2562.	0.308	5562.	0.033
2565.	0.309	5565.	0.032
2568.	0.312	5568.	0.031
2571.	0.312	5571.	0.03
2574.	0.31	5574.	0.03
2577.	0.309	5577.	0.028
2580.	0.311	5580.	0.027
2583.	0.311	5583.	0.026
2586.	0.313	5586.	0.025
2589.	0.316	5589.	0.025
2592.	0.312	5592.	0.024
2595.	0.317	5595.	0.022
2598.	0.315	5598.	0.02
2601.	0.317	5601.	0.021
2604.	0.319	5604.	0.02
2607.	0.322	5607.	0.022
2610.	0.32	5610.	0.022
2613.	0.318	5613.	0.022
2616.	0.317	5616.	0.02
2619.	0.317	5619.	0.025
2622.	0.316	5622.	0.024
2625.	0.316	5625.	0.025
2628.	0.315	5628.	0.024
2631.	0.312	5631.	0.025
2634.	0.314	5634.	0.022
2637.	0.314	5637.	0.023
2640.	0.315	5640.	0.024
2643.	0.314	5643.	0.025
2646.	0.313	5646.	0.028
2649.	0.313	5649.	0.026
2652.	0.31	5652.	0.027
2655.	0.311	5655.	0.023
2658.	0.307	5658.	0.027

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2661.	0.307	5661.	0.025
2664.	0.306	5664.	0.025
2667.	0.304	5667.	0.024
2670.	0.308	5670.	0.024
2673.	0.305	5673.	0.021
2676.	0.303	5676.	0.026
2679.	0.302	5679.	0.022
2682.	0.305	5682.	0.023
2685.	0.308	5685.	0.023
2688.	0.306	5688.	0.022
2691.	0.301	5691.	0.02
2694.	0.306	5694.	0.019
2697.	0.302	5697.	0.019
2700.	0.304	5700.	0.021
2703.	0.299	5703.	0.019
2706.	0.301	5706.	0.021
2709.	0.303	5709.	0.022
2712.	0.302	5712.	0.02
2715.	0.3	5715.	0.02
2718.	0.305	5718.	0.019
2721.	0.307	5721.	0.017
2724.	0.307	5724.	0.017
2727.	0.308	5727.	0.016
2730.	0.309	5730.	0.015
2733.	0.313	5733.	0.013
2736.	0.311	5736.	0.013
2739.	0.31	5739.	0.014
2742.	0.309	5742.	0.013
2745.	0.31	5745.	0.014
2748.	0.31	5748.	0.013
2751.	0.313	5751.	0.014
2754.	0.313	5754.	0.013
2757.	0.313	5757.	0.013
2760.	0.313	5760.	0.014
2763.	0.314	5763.	0.01
2766.	0.318	5766.	0.012
2769.	0.315	5769.	0.01
2772.	0.315	5772.	0.013
2775.	0.314	5775.	0.011
2778.	0.311	5778.	0.013
2781.	0.314	5781.	0.011
2784.	0.314	5784.	0.01
2787.	0.313	5787.	0.01
2790.	0.312	5790.	0.011
2793.	0.311	5793.	0.011
2796.	0.312	5796.	0.011
2799.	0.311	5799.	0.01
2802.	0.308	5802.	0.01
2805.	0.31	5805.	0.012
2808.	0.31	5808.	0.015
2811.	0.312	5811.	0.016
2814.	0.307	5814.	0.018
2817.	0.307	5817.	0.02
2820.	0.305	5820.	0.02
2823.	0.302	5823.	0.018
2826.	0.299	5826.	0.02
2829.	0.299	5829.	0.022
2832.	0.301	5832.	0.023
2835.	0.299	5835.	0.024
2838.	0.301	5838.	0.022
2841.	0.299	5841.	0.02
2844.	0.299	5844.	0.026
2847.	0.299	5847.	0.021
2850.	0.296	5850.	0.019
2853.	0.298	5853.	0.022
2856.	0.295	5856.	0.022
2859.	0.293	5859.	0.024

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
2862.	0.295	5862.	0.021
2865.	0.291	5865.	0.02
2868.	0.292	5868.	0.02
2871.	0.291	5871.	0.021
2874.	0.291	5874.	0.02
2877.	0.29	5877.	0.02
2880.	0.292	5880.	0.018
2883.	0.293	5883.	0.02
2886.	0.29	5886.	0.019
2889.	0.292	5889.	0.017
2892.	0.293	5892.	0.018
2895.	0.296	5895.	0.017
2898.	0.293	5898.	0.016
2901.	0.293	5901.	0.017
2904.	0.293	5904.	0.013
2907.	0.295	5907.	0.015
2910.	0.291	5910.	0.014
2913.	0.292	5913.	0.013
2916.	0.292	5916.	0.014
2919.	0.294	5919.	0.012
2922.	0.292	5922.	0.014
2925.	0.294	5925.	0.012
2928.	0.297	5928.	0.013
2931.	0.3	5931.	0.013
2934.	0.297	5934.	0.014
2937.	0.298	5937.	0.015
2940.	0.297	5940.	0.012
2943.	0.3	5943.	0.014
2946.	0.296	5946.	0.015
2949.	0.299	5949.	0.013
2952.	0.3	5952.	0.013
2955.	0.299	5955.	0.013
2958.	0.298	5958.	0.015
2961.	0.3	5961.	0.015
2964.	0.3	5964.	0.015
2967.	0.302	5967.	0.015
2970.	0.3	5970.	0.018
2973.	0.304	5973.	0.019
2976.	0.302	5976.	0.019
2979.	0.304	5979.	0.021
2982.	0.303	5982.	0.02
2985.	0.305	5985.	0.023
2988.	0.305	5988.	0.024
2991.	0.303	5991.	0.026
2994.	0.304	5994.	0.029
2997.	0.305	5997.	0.028
3000.	0.308	6000.	0.028

Observation Well No. 5: SB-24U-S1

X Location: 0. ft  
Y Location: 0. ft

Radial distance from RW-2 (10-inch): 0. ft

Fully Penetrating Well

No. of Observations: 2000

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
3.	0.	3003.	0.078
6.	0.001	3006.	0.078
9.	0.001	3009.	0.077
12.	0.001	3012.	0.08
15.	0.002	3015.	0.082
18.	0.001	3018.	0.079

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.	0.003	3021.	0.08
24.	0.	3024.	0.08
27.	0.001	3027.	0.08
30.	0.001	3030.	0.08
33.	0.001	3033.	0.079
36.	0.002	3036.	0.081
39.	0.002	3039.	0.079
42.	0.001	3042.	0.08
45.	0.001	3045.	0.08
48.	0.003	3048.	0.079
51.	0.	3051.	0.079
54.	0.001	3054.	0.078
57.	0.	3057.	0.079
60.	0.001	3060.	0.079
63.	0.003	3063.	0.08
66.	0.004	3066.	0.081
69.	0.002	3069.	0.079
72.	0.002	3072.	0.08
75.	0.001	3075.	0.08
78.	0.004	3078.	0.081
81.	0.002	3081.	0.079
84.	0.001	3084.	0.081
87.	0.001	3087.	0.079
90.	0.003	3090.	0.078
93.	0.	3093.	0.081
96.	0.001	3096.	0.081
99.	0.001	3099.	0.079
102.	0.002	3102.	0.081
105.	0.001	3105.	0.08
108.	0.004	3108.	0.08
111.	0.	3111.	0.08
114.	0.002	3114.	0.077
117.	0.002	3117.	0.08
120.	0.002	3120.	0.081
123.	0.003	3123.	0.081
126.	0.001	3126.	0.089
129.	0.001	3129.	0.08
132.	0.002	3132.	0.081
135.	0.004	3135.	0.081
138.	0.002	3138.	0.082
141.	0.001	3141.	0.081
144.	0.002	3144.	0.081
147.	0.001	3147.	0.081
150.	0.001	3150.	0.081
153.	0.	3153.	0.082
156.	0.	3156.	0.081
159.	0.	3159.	0.08
162.	0.001	3162.	0.082
165.	0.	3165.	0.081
168.	0.002	3168.	0.08
171.	0.001	3171.	0.083
174.	0.001	3174.	0.082
177.	0.001	3177.	0.079
180.	0.002	3180.	0.082
183.	0.001	3183.	0.081
186.	0.003	3186.	0.081
189.	0.	3189.	0.08
192.	0.	3192.	0.08
195.	0.001	3195.	0.08
198.	0.001	3198.	0.08
201.	0.001	3201.	0.081
204.	0.001	3204.	0.08
207.	0.002	3207.	0.083
210.	0.001	3210.	0.079
213.	0.001	3213.	0.082
216.	0.001	3216.	0.082
219.	0.	3219.	0.08

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
222.	0.003	3222.	0.082
225.	0.	3225.	0.083
228.	0.001	3228.	0.084
231.	0.002	3231.	0.082
234.	0.001	3234.	0.079
237.	0.002	3237.	0.083
240.	0.	3240.	0.082
243.	0.	3243.	0.083
246.	0.001	3246.	0.08
249.	0.001	3249.	0.084
252.	0.001	3252.	0.084
255.	0.004	3255.	0.081
258.	0.001	3258.	0.082
261.	0.001	3261.	0.083
264.	0.	3264.	0.081
267.	0.001	3267.	0.082
270.	0.	3270.	0.082
273.	0.001	3273.	0.081
276.	0.002	3276.	0.083
279.	0.001	3279.	0.083
282.	0.001	3282.	0.082
285.	0.001	3285.	0.082
288.	0.002	3288.	0.085
291.	0.	3291.	0.083
294.	0.001	3294.	0.083
297.	0.002	3297.	0.083
300.	0.	3300.	0.081
303.	0.	3303.	0.081
306.	0.	3306.	0.083
309.	0.001	3309.	0.082
312.	0.	3312.	0.084
315.	0.002	3315.	0.083
318.	0.001	3318.	0.083
321.	0.	3321.	0.084
324.	0.	3324.	0.084
327.	0.	3327.	0.085
330.	0.002	3330.	0.084
333.	0.002	3333.	0.081
336.	0.	3336.	0.084
339.	0.	3339.	0.083
342.	0.002	3342.	0.081
345.	0.	3345.	0.084
348.	0.	3348.	0.082
351.	0.	3351.	0.083
354.	0.002	3354.	0.084
357.	0.	3357.	0.084
360.	0.002	3360.	0.084
363.	0.	3363.	0.084
366.	0.	3366.	0.083
369.	0.002	3369.	0.081
372.	0.001	3372.	0.083
375.	0.	3375.	0.083
378.	0.001	3378.	0.083
381.	0.001	3381.	0.083
384.	0.	3384.	0.083
387.	0.001	3387.	0.084
390.	0.	3390.	0.08
393.	0.001	3393.	0.082
396.	0.001	3396.	0.081
399.	0.001	3399.	0.08
402.	0.001	3402.	0.082
405.	0.001	3405.	0.082
408.	0.003	3408.	0.082
411.	0.003	3411.	0.081
414.	0.002	3414.	0.08
417.	0.002	3417.	0.081
420.	0.001	3420.	0.082

## AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
423.	0.004	3423.	0.081
426.	0.001	3426.	0.081
429.	0.003	3429.	0.081
432.	0.004	3432.	0.077
435.	0.003	3435.	0.081
438.	0.003	3438.	0.081
441.	0.003	3441.	0.081
444.	0.002	3444.	0.082
447.	0.004	3447.	0.08
450.	0.002	3450.	0.079
453.	0.005	3453.	0.083
456.	0.004	3456.	0.082
459.	0.003	3459.	0.082
462.	0.002	3462.	0.083
465.	0.003	3465.	0.081
468.	0.006	3468.	0.082
471.	0.003	3471.	0.081
474.	0.004	3474.	0.083
477.	0.004	3477.	0.083
480.	0.005	3480.	0.081
483.	0.003	3483.	0.081
486.	0.002	3486.	0.081
489.	0.004	3489.	0.08
492.	0.004	3492.	0.083
495.	0.009	3495.	0.082
498.	0.005	3498.	0.086
501.	0.005	3501.	0.082
504.	0.005	3504.	0.081
507.	0.003	3507.	0.083
510.	0.004	3510.	0.082
513.	0.004	3513.	0.083
516.	0.003	3516.	0.08
519.	0.001	3519.	0.083
522.	0.003	3522.	0.082
525.	0.004	3525.	0.082
528.	0.003	3528.	0.083
531.	0.003	3531.	0.082
534.	0.004	3534.	0.083
537.	0.003	3537.	0.083
540.	0.001	3540.	0.084
543.	0.004	3543.	0.081
546.	0.005	3546.	0.081
549.	0.003	3549.	0.082
552.	0.003	3552.	0.079
555.	0.004	3555.	0.081
558.	0.003	3558.	0.081
561.	0.005	3561.	0.081
564.	0.003	3564.	0.081
567.	0.003	3567.	0.081
570.	0.004	3570.	0.08
573.	0.005	3573.	0.081
576.	0.004	3576.	0.079
579.	0.003	3579.	0.08
582.	0.004	3582.	0.08
585.	0.005	3585.	0.079
588.	0.003	3588.	0.08
591.	0.005	3591.	0.081
594.	0.004	3594.	0.078
597.	0.006	3597.	0.079
600.	0.003	3600.	0.079
603.	0.008	3603.	0.077
606.	0.005	3606.	0.077
609.	0.005	3609.	0.077
612.	0.005	3612.	0.08
615.	0.006	3615.	0.075
618.	0.004	3618.	0.079
621.	0.006	3621.	0.077

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
624.	0.007	3624.	0.076
627.	0.006	3627.	0.077
630.	0.007	3630.	0.077
633.	0.005	3633.	0.076
636.	0.009	3636.	0.076
639.	0.006	3639.	0.076
642.	0.006	3642.	0.076
645.	0.009	3645.	0.077
648.	0.007	3648.	0.076
651.	0.006	3651.	0.076
654.	0.006	3654.	0.076
657.	0.008	3657.	0.075
660.	0.007	3660.	0.076
663.	0.005	3663.	0.075
666.	0.005	3666.	0.077
669.	0.004	3669.	0.074
672.	0.007	3672.	0.078
675.	0.005	3675.	0.07
678.	0.003	3678.	0.061
681.	0.003	3681.	0.017
684.	0.005	3684.	0.14
687.	0.005	3687.	0.231
690.	0.005	3690.	0.302
693.	0.004	3693.	0.362
696.	0.006	3696.	0.426
699.	0.005	3699.	0.472
702.	0.003	3702.	0.528
705.	0.003	3705.	0.562
708.	0.004	3708.	0.607
711.	0.005	3711.	0.659
714.	0.004	3714.	0.708
717.	0.004	3717.	0.748
720.	0.005	3720.	0.796
723.	0.002	3723.	0.813
726.	0.005	3726.	0.832
729.	0.007	3729.	0.837
732.	0.002	3732.	0.846
735.	0.004	3735.	0.862
738.	0.003	3738.	0.869
741.	0.004	3741.	0.871
744.	0.005	3744.	0.89
747.	0.002	3747.	0.896
750.	0.007	3750.	0.904
753.	0.005	3753.	0.921
756.	0.005	3756.	0.922
759.	0.006	3759.	0.925
762.	0.005	3762.	0.918
765.	0.005	3765.	0.903
768.	0.006	3768.	0.898
771.	0.006	3771.	0.879
774.	0.004	3774.	0.864
777.	0.005	3777.	0.838
780.	0.006	3780.	0.833
783.	0.005	3783.	0.815
786.	0.005	3786.	0.786
789.	0.005	3789.	0.782
792.	0.006	3792.	0.786
795.	0.006	3795.	0.803
798.	0.005	3798.	0.808
801.	0.009	3801.	0.82
804.	0.006	3804.	0.831
807.	0.004	3807.	0.829
810.	0.005	3810.	0.835
813.	0.008	3813.	0.836
816.	0.004	3816.	0.841
819.	0.007	3819.	0.816
822.	0.007	3822.	0.812

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
825.	0.008	3825.	0.807
828.	0.008	3828.	0.791
831.	0.01	3831.	0.785
834.	0.006	3834.	0.772
837.	0.006	3837.	0.762
840.	0.005	3840.	0.764
843.	0.007	3843.	0.763
846.	0.005	3846.	0.743
849.	0.003	3849.	0.74
852.	0.006	3852.	0.732
855.	0.007	3855.	0.738
858.	0.006	3858.	0.694
861.	0.005	3861.	0.718
864.	0.005	3864.	0.703
867.	0.006	3867.	0.698
870.	0.004	3870.	0.686
873.	0.005	3873.	0.708
876.	0.005	3876.	0.642
879.	0.004	3879.	0.577
882.	0.005	3882.	0.622
885.	0.003	3885.	0.715
888.	0.004	3888.	0.813
891.	0.001	3891.	0.867
894.	0.001	3894.	0.878
897.	0.004	3897.	0.874
900.	0.003	3900.	0.848
903.	0.005	3903.	0.831
906.	0.002	3906.	0.804
909.	0.002	3909.	0.778
912.	0.002	3912.	0.756
915.	0.002	3915.	0.732
918.	0.003	3918.	0.715
921.	0.002	3921.	0.709
924.	0.003	3924.	0.722
927.	0.002	3927.	0.747
930.	0.003	3930.	0.763
933.	0.002	3933.	0.754
936.	0.003	3936.	0.749
939.	0.002	3939.	0.738
942.	0.003	3942.	0.722
945.	0.	3945.	0.706
948.	0.002	3948.	0.687
951.	0.001	3951.	0.69
954.	0.004	3954.	0.675
957.	0.001	3957.	0.668
960.	0.003	3960.	0.652
963.	0.003	3963.	0.638
966.	0.002	3966.	0.624
969.	0.003	3969.	0.625
972.	0.002	3972.	0.618
975.	0.003	3975.	0.612
978.	0.002	3978.	0.616
981.	0.003	3981.	0.615
984.	0.003	3984.	0.616
987.	0.003	3987.	0.606
990.	0.002	3990.	0.602
993.	0.001	3993.	0.594
996.	0.003	3996.	0.591
999.	0.002	3999.	0.595
1002.	0.003	4002.	0.586
1005.	0.004	4005.	0.582
1008.	0.003	4008.	0.581
1011.	0.001	4011.	0.579
1014.	0.001	4014.	0.58
1017.	0.003	4017.	0.578
1020.	0.004	4020.	0.574
1023.	0.001	4023.	0.581

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1026.	0.002	4026.	0.585
1029.	0.	4029.	0.589
1032.	0.001	4032.	0.578
1035.	0.001	4035.	0.586
1038.	0.001	4038.	0.591
1041.	0.001	4041.	0.598
1044.	0.001	4044.	0.593
1047.	0.001	4047.	0.597
1050.	0.	4050.	0.592
1053.	0.	4053.	0.597
1056.	0.002	4056.	0.598
1059.	0.	4059.	0.597
1062.	0.002	4062.	0.598
1065.	0.001	4065.	0.594
1068.	0.001	4068.	0.595
1071.	0.001	4071.	0.606
1074.	0.	4074.	0.597
1077.	0.	4077.	0.597
1080.	0.001	4080.	0.595
1083.	0.001	4083.	0.602
1086.	0.001	4086.	0.609
1089.	0.001	4089.	0.596
1092.	0.003	4092.	0.611
1095.	0.002	4095.	0.627
1098.	0.001	4098.	0.614
1101.	0.002	4101.	0.615
1104.	0.002	4104.	0.602
1107.	0.001	4107.	0.587
1110.	0.002	4110.	0.549
1113.	0.002	4113.	0.543
1116.	0.001	4116.	0.503
1119.	0.002	4119.	0.455
1122.	0.001	4122.	0.435
1125.	0.004	4125.	0.415
1128.	0.004	4128.	0.419
1131.	0.004	4131.	0.425
1134.	0.003	4134.	0.438
1137.	0.003	4137.	0.443
1140.	0.003	4140.	0.45
1143.	0.004	4143.	0.441
1146.	0.004	4146.	0.433
1149.	0.004	4149.	0.431
1152.	0.004	4152.	0.415
1155.	0.004	4155.	0.436
1158.	0.003	4158.	0.439
1161.	0.005	4161.	0.465
1164.	0.005	4164.	0.427
1167.	0.003	4167.	0.435
1170.	0.008	4170.	0.445
1173.	0.007	4173.	0.452
1176.	0.007	4176.	0.459
1179.	0.007	4179.	0.467
1182.	0.007	4182.	0.473
1185.	0.007	4185.	0.486
1188.	0.007	4188.	0.49
1191.	0.005	4191.	0.497
1194.	0.006	4194.	0.501
1197.	0.004	4197.	0.492
1200.	0.006	4200.	0.497
1203.	0.005	4203.	0.496
1206.	0.007	4206.	0.505
1209.	0.002	4209.	0.514
1212.	0.004	4212.	0.521
1215.	0.003	4215.	0.533
1218.	0.006	4218.	0.544
1221.	0.004	4221.	0.548
1224.	0.004	4224.	0.529

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1227.	0.004	4227.	0.53
1230.	0.002	4230.	0.544
1233.	0.002	4233.	0.557
1236.	0.002	4236.	0.559
1239.	0.003	4239.	0.564
1242.	0.002	4242.	0.567
1245.	0.	4245.	0.567
1248.	0.001	4248.	0.568
1251.	0.001	4251.	0.571
1254.	0.002	4254.	0.573
1257.	0.	4257.	0.571
1260.	0.001	4260.	0.57
1263.	0.	4263.	0.565
1266.	0.	4266.	0.561
1269.	0.001	4269.	0.551
1272.	0.	4272.	0.547
1275.	0.	4275.	0.541
1278.	0.001	4278.	0.532
1281.	0.	4281.	0.528
1284.	0.002	4284.	0.516
1287.	0.001	4287.	0.509
1290.	0.	4290.	0.505
1293.	0.001	4293.	0.499
1296.	0.002	4296.	0.483
1299.	0.	4299.	0.474
1302.	0.005	4302.	0.468
1305.	0.002	4305.	0.459
1308.	0.004	4308.	0.453
1311.	0.002	4311.	0.446
1314.	0.003	4314.	0.435
1317.	0.002	4317.	0.423
1320.	0.002	4320.	0.416
1323.	0.001	4323.	0.416
1326.	0.002	4326.	0.419
1329.	0.	4329.	0.429
1332.	0.001	4332.	0.412
1335.	0.001	4335.	0.396
1338.	0.	4338.	0.404
1341.	0.001	4341.	0.398
1344.	0.003	4344.	0.402
1347.	0.001	4347.	0.41
1350.	0.002	4350.	0.414
1353.	0.	4353.	0.409
1356.	0.003	4356.	0.405
1359.	0.002	4359.	0.403
1362.	0.003	4362.	0.398
1365.	0.003	4365.	0.395
1368.	0.004	4368.	0.39
1371.	0.002	4371.	0.387
1374.	0.001	4374.	0.384
1377.	0.005	4377.	0.385
1380.	0.004	4380.	0.392
1383.	0.003	4383.	0.398
1386.	0.002	4386.	0.394
1389.	0.001	4389.	0.39
1392.	0.003	4392.	0.389
1395.	0.002	4395.	0.41
1398.	0.002	4398.	0.428
1401.	0.005	4401.	0.431
1404.	0.002	4404.	0.42
1407.	0.001	4407.	0.416
1410.	0.002	4410.	0.442
1413.	0.002	4413.	0.459
1416.	0.001	4416.	0.445
1419.	0.003	4419.	0.446
1422.	0.002	4422.	0.441
1425.	0.001	4425.	0.426

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1428.	0.002	4428.	0.406
1431.	0.003	4431.	0.388
1434.	0.002	4434.	0.379
1437.	0.002	4437.	0.371
1440.	0.003	4440.	0.365
1443.	0.001	4443.	0.361
1446.	0.002	4446.	0.357
1449.	0.003	4449.	0.354
1452.	0.001	4452.	0.353
1455.	0.002	4455.	0.353
1458.	0.002	4458.	0.352
1461.	0.	4461.	0.358
1464.	0.003	4464.	0.379
1467.	0.	4467.	0.394
1470.	0.002	4470.	0.398
1473.	0.002	4473.	0.406
1476.	0.001	4476.	0.406
1479.	0.004	4479.	0.408
1482.	0.001	4482.	0.409
1485.	0.003	4485.	0.411
1488.	0.001	4488.	0.413
1491.	0.002	4491.	0.413
1494.	0.	4494.	0.413
1497.	0.002	4497.	0.41
1500.	0.002	4500.	0.416
1503.	0.	4503.	0.425
1506.	0.001	4506.	0.435
1509.	0.	4509.	0.446
1512.	0.001	4512.	0.448
1515.	0.003	4515.	0.445
1518.	0.001	4518.	0.443
1521.	0.001	4521.	0.435
1524.	0.002	4524.	0.434
1527.	0.	4527.	0.428
1530.	0.001	4530.	0.424
1533.	0.003	4533.	0.417
1536.	0.001	4536.	0.41
1539.	0.004	4539.	0.396
1542.	0.002	4542.	0.385
1545.	0.002	4545.	0.378
1548.	0.004	4548.	0.373
1551.	0.003	4551.	0.373
1554.	0.005	4554.	0.372
1557.	0.006	4557.	0.375
1560.	0.008	4560.	0.377
1563.	0.007	4563.	0.384
1566.	0.01	4566.	0.391
1569.	0.011	4569.	0.39
1572.	0.012	4572.	0.395
1575.	0.011	4575.	0.405
1578.	0.016	4578.	0.41
1581.	0.013	4581.	0.414
1584.	0.015	4584.	0.407
1587.	0.017	4587.	0.384
1590.	0.017	4590.	0.346
1593.	0.019	4593.	0.328
1596.	0.018	4596.	0.303
1599.	0.018	4599.	0.297
1602.	0.019	4602.	0.307
1605.	0.019	4605.	0.342
1608.	0.021	4608.	0.354
1611.	0.022	4611.	0.347
1614.	0.022	4614.	0.344
1617.	0.022	4617.	0.342
1620.	0.024	4620.	0.34
1623.	0.024	4623.	0.344
1626.	0.025	4626.	0.342

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1629.	0.024	4629.	0.338
1632.	0.024	4632.	0.33
1635.	0.026	4635.	0.346
1638.	0.026	4638.	0.334
1641.	0.027	4641.	0.331
1644.	0.027	4644.	0.329
1647.	0.028	4647.	0.324
1650.	0.03	4650.	0.317
1653.	0.029	4653.	0.314
1656.	0.029	4656.	0.314
1659.	0.031	4659.	0.306
1662.	0.029	4662.	0.308
1665.	0.032	4665.	0.303
1668.	0.031	4668.	0.297
1671.	0.033	4671.	0.295
1674.	0.033	4674.	0.295
1677.	0.033	4677.	0.291
1680.	0.033	4680.	0.297
1683.	0.031	4683.	0.301
1686.	0.035	4686.	0.296
1689.	0.034	4689.	0.298
1692.	0.036	4692.	0.294
1695.	0.034	4695.	0.296
1698.	0.034	4698.	0.299
1701.	0.035	4701.	0.305
1704.	0.037	4704.	0.308
1707.	0.035	4707.	0.307
1710.	0.035	4710.	0.31
1713.	0.035	4713.	0.309
1716.	0.036	4716.	0.315
1719.	0.037	4719.	0.316
1722.	0.039	4722.	0.314
1725.	0.037	4725.	0.321
1728.	0.04	4728.	0.319
1731.	0.038	4731.	0.322
1734.	0.035	4734.	0.327
1737.	0.038	4737.	0.323
1740.	0.039	4740.	0.33
1743.	0.04	4743.	0.331
1746.	0.036	4746.	0.328
1749.	0.039	4749.	0.326
1752.	0.041	4752.	0.335
1755.	0.04	4755.	0.334
1758.	0.042	4758.	0.335
1761.	0.041	4761.	0.339
1764.	0.041	4764.	0.337
1767.	0.044	4767.	0.338
1770.	0.043	4770.	0.34
1773.	0.043	4773.	0.341
1776.	0.044	4776.	0.339
1779.	0.046	4779.	0.342
1782.	0.044	4782.	0.34
1785.	0.045	4785.	0.35
1788.	0.045	4788.	0.351
1791.	0.047	4791.	0.348
1794.	0.048	4794.	0.341
1797.	0.046	4797.	0.351
1800.	0.052	4800.	0.358
1803.	0.049	4803.	0.354
1806.	0.048	4806.	0.353
1809.	0.051	4809.	0.356
1812.	0.05	4812.	0.359
1815.	0.05	4815.	0.359
1818.	0.049	4818.	0.358
1821.	0.051	4821.	0.363
1824.	0.051	4824.	0.363
1827.	0.05	4827.	0.367

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1830.	0.051	4830.	0.366
1833.	0.05	4833.	0.368
1836.	0.052	4836.	0.366
1839.	0.052	4839.	0.372
1842.	0.052	4842.	0.371
1845.	0.052	4845.	0.37
1848.	0.054	4848.	0.376
1851.	0.054	4851.	0.365
1854.	0.054	4854.	0.37
1857.	0.055	4857.	0.372
1860.	0.056	4860.	0.366
1863.	0.055	4863.	0.371
1866.	0.054	4866.	0.38
1869.	0.057	4869.	0.375
1872.	0.056	4872.	0.378
1875.	0.056	4875.	0.381
1878.	0.058	4878.	0.384
1881.	0.057	4881.	0.387
1884.	0.057	4884.	0.385
1887.	0.057	4887.	0.371
1890.	0.059	4890.	0.375
1893.	0.058	4893.	0.378
1896.	0.06	4896.	0.38
1899.	0.063	4899.	0.387
1902.	0.059	4902.	0.388
1905.	0.06	4905.	0.392
1908.	0.058	4908.	0.406
1911.	0.062	4911.	0.403
1914.	0.061	4914.	0.41
1917.	0.061	4917.	0.407
1920.	0.061	4920.	0.418
1923.	0.062	4923.	0.421
1926.	0.064	4926.	0.423
1929.	0.062	4929.	0.421
1932.	0.063	4932.	0.425
1935.	0.062	4935.	0.429
1938.	0.065	4938.	0.425
1941.	0.063	4941.	0.424
1944.	0.064	4944.	0.436
1947.	0.063	4947.	0.448
1950.	0.065	4950.	0.45
1953.	0.067	4953.	0.441
1956.	0.067	4956.	0.446
1959.	0.067	4959.	0.441
1962.	0.066	4962.	0.45
1965.	0.064	4965.	0.446
1968.	0.068	4968.	0.449
1971.	0.065	4971.	0.453
1974.	0.069	4974.	0.454
1977.	0.068	4977.	0.461
1980.	0.068	4980.	0.454
1983.	0.068	4983.	0.451
1986.	0.068	4986.	0.455
1989.	0.069	4989.	0.459
1992.	0.068	4992.	0.457
1995.	0.07	4995.	0.455
1998.	0.068	4998.	0.463
2001.	0.068	5001.	0.458
2004.	0.068	5004.	0.458
2007.	0.069	5007.	0.461
2010.	0.069	5010.	0.457
2013.	0.07	5013.	0.455
2016.	0.07	5016.	0.452
2019.	0.068	5019.	0.452
2022.	0.071	5022.	0.454
2025.	0.071	5025.	0.454
2028.	0.072	5028.	0.46

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2031.	0.07	5031.	0.461
2034.	0.07	5034.	0.465
2037.	0.072	5037.	0.466
2040.	0.072	5040.	0.46
2043.	0.071	5043.	0.466
2046.	0.071	5046.	0.466
2049.	0.071	5049.	0.468
2052.	0.074	5052.	0.472
2055.	0.072	5055.	0.47
2058.	0.072	5058.	0.473
2061.	0.072	5061.	0.473
2064.	0.072	5064.	0.471
2067.	0.073	5067.	0.471
2070.	0.072	5070.	0.475
2073.	0.072	5073.	0.477
2076.	0.073	5076.	0.475
2079.	0.074	5079.	0.476
2082.	0.074	5082.	0.476
2085.	0.071	5085.	0.473
2088.	0.071	5088.	0.474
2091.	0.074	5091.	0.475
2094.	0.076	5094.	0.467
2097.	0.074	5097.	0.469
2100.	0.074	5100.	0.474
2103.	0.074	5103.	0.471
2106.	0.075	5106.	0.474
2109.	0.073	5109.	0.475
2112.	0.075	5112.	0.476
2115.	0.074	5115.	0.478
2118.	0.075	5118.	0.48
2121.	0.072	5121.	0.488
2124.	0.076	5124.	0.487
2127.	0.077	5127.	0.489
2130.	0.077	5130.	0.487
2133.	0.076	5133.	0.486
2136.	0.075	5136.	0.488
2139.	0.073	5139.	0.494
2142.	0.073	5142.	0.496
2145.	0.077	5145.	0.487
2148.	0.076	5148.	0.482
2151.	0.077	5151.	0.486
2154.	0.078	5154.	0.488
2157.	0.077	5157.	0.489
2160.	0.076	5160.	0.488
2163.	0.079	5163.	0.489
2166.	0.078	5166.	0.495
2169.	0.077	5169.	0.497
2172.	0.091	5172.	0.499
2175.	0.079	5175.	0.499
2178.	0.081	5178.	0.499
2181.	0.079	5181.	0.504
2184.	0.079	5184.	0.507
2187.	0.08	5187.	0.512
2190.	0.079	5190.	0.513
2193.	0.076	5193.	0.511
2196.	0.078	5196.	0.513
2199.	0.079	5199.	0.52
2202.	0.078	5202.	0.518
2205.	0.079	5205.	0.518
2208.	0.078	5208.	0.515
2211.	0.077	5211.	0.518
2214.	0.079	5214.	0.518
2217.	0.078	5217.	0.52
2220.	0.078	5220.	0.528
2223.	0.078	5223.	0.531
2226.	0.078	5226.	0.53
2229.	0.079	5229.	0.538

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2232.	0.077	5232.	0.542
2235.	0.079	5235.	0.536
2238.	0.077	5238.	0.537
2241.	0.079	5241.	0.54
2244.	0.079	5244.	0.545
2247.	0.078	5247.	0.544
2250.	0.082	5250.	0.547
2253.	0.079	5253.	0.546
2256.	0.079	5256.	0.552
2259.	0.077	5259.	0.553
2262.	0.078	5262.	0.554
2265.	0.081	5265.	0.557
2268.	0.081	5268.	0.55
2271.	0.081	5271.	0.555
2274.	0.079	5274.	0.558
2277.	0.082	5277.	0.566
2280.	0.08	5280.	0.566
2283.	0.078	5283.	0.568
2286.	0.081	5286.	0.57
2289.	0.079	5289.	0.572
2292.	0.079	5292.	0.58
2295.	0.079	5295.	0.574
2298.	0.08	5298.	0.576
2301.	0.081	5301.	0.58
2304.	0.08	5304.	0.579
2307.	0.08	5307.	0.579
2310.	0.08	5310.	0.58
2313.	0.082	5313.	0.586
2316.	0.08	5316.	0.592
2319.	0.08	5319.	0.591
2322.	0.082	5322.	0.598
2325.	0.08	5325.	0.599
2328.	0.081	5328.	0.602
2331.	0.081	5331.	0.595
2334.	0.08	5334.	0.597
2337.	0.081	5337.	0.603
2340.	0.081	5340.	0.601
2343.	0.082	5343.	0.606
2346.	0.079	5346.	0.612
2349.	0.08	5349.	0.615
2352.	0.081	5352.	0.614
2355.	0.083	5355.	0.624
2358.	0.08	5358.	0.627
2361.	0.08	5361.	0.627
2364.	0.082	5364.	0.63
2367.	0.078	5367.	0.63
2370.	0.082	5370.	0.63
2373.	0.082	5373.	0.633
2376.	0.082	5376.	0.629
2379.	0.079	5379.	0.626
2382.	0.08	5382.	0.629
2385.	0.081	5385.	0.63
2388.	0.08	5388.	0.636
2391.	0.08	5391.	0.637
2394.	0.081	5394.	0.643
2397.	0.081	5397.	0.649
2400.	0.083	5400.	0.649
2403.	0.081	5403.	0.641
2406.	0.081	5406.	0.646
2409.	0.078	5409.	0.65
2412.	0.081	5412.	0.655
2415.	0.078	5415.	0.667
2418.	0.077	5418.	0.673
2421.	0.08	5421.	0.674
2424.	0.079	5424.	0.67
2427.	0.08	5427.	0.675
2430.	0.08	5430.	0.676

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2433.	0.08	5433.	0.68
2436.	0.078	5436.	0.695
2439.	0.078	5439.	0.702
2442.	0.078	5442.	0.703
2445.	0.08	5445.	0.704
2448.	0.077	5448.	0.712
2451.	0.078	5451.	0.706
2454.	0.078	5454.	0.709
2457.	0.077	5457.	0.711
2460.	0.076	5460.	0.712
2463.	0.077	5463.	0.714
2466.	0.077	5466.	0.717
2469.	0.075	5469.	0.717
2472.	0.075	5472.	0.715
2475.	0.077	5475.	0.718
2478.	0.078	5478.	0.72
2481.	0.078	5481.	0.725
2484.	0.077	5484.	0.731
2487.	0.077	5487.	0.734
2490.	0.077	5490.	0.736
2493.	0.075	5493.	0.739
2496.	0.079	5496.	0.743
2499.	0.076	5499.	0.743
2502.	0.078	5502.	0.739
2505.	0.079	5505.	0.743
2508.	0.077	5508.	0.749
2511.	0.079	5511.	0.747
2514.	0.079	5514.	0.749
2517.	0.08	5517.	0.752
2520.	0.08	5520.	0.755
2523.	0.079	5523.	0.753
2526.	0.08	5526.	0.752
2529.	0.079	5529.	0.758
2532.	0.08	5532.	0.762
2535.	0.081	5535.	0.773
2538.	0.08	5538.	0.771
2541.	0.082	5541.	0.777
2544.	0.08	5544.	0.778
2547.	0.081	5547.	0.777
2550.	0.081	5550.	0.774
2553.	0.08	5553.	0.774
2556.	0.081	5556.	0.773
2559.	0.081	5559.	0.771
2562.	0.078	5562.	0.771
2565.	0.08	5565.	0.302
2568.	0.081	5568.	0.303
2571.	0.08	5571.	0.3
2574.	0.082	5574.	0.301
2577.	0.08	5577.	0.298
2580.	0.079	5580.	0.3
2583.	0.078	5583.	0.3
2586.	0.08	5586.	0.301
2589.	0.077	5589.	0.297
2592.	0.077	5592.	0.296
2595.	0.078	5595.	0.297
2598.	0.08	5598.	0.299
2601.	0.078	5601.	0.301
2604.	0.077	5604.	0.301
2607.	0.077	5607.	0.303
2610.	0.077	5610.	0.301
2613.	0.08	5613.	0.3
2616.	0.076	5616.	0.299
2619.	0.077	5619.	0.296
2622.	0.076	5622.	0.296
2625.	0.075	5625.	0.298
2628.	0.078	5628.	0.298
2631.	0.082	5631.	0.298

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2634.	0.079	5634.	0.302
2637.	0.077	5637.	0.307
2640.	0.078	5640.	0.311
2643.	0.078	5643.	0.31
2646.	0.077	5646.	0.308
2649.	0.076	5649.	0.308
2652.	0.076	5652.	0.306
2655.	0.078	5655.	0.304
2658.	0.077	5658.	0.305
2661.	0.078	5661.	0.306
2664.	0.078	5664.	0.308
2667.	0.08	5667.	0.309
2670.	0.081	5670.	0.309
2673.	0.077	5673.	0.311
2676.	0.078	5676.	0.308
2679.	0.079	5679.	0.302
2682.	0.078	5682.	0.307
2685.	0.078	5685.	0.307
2688.	0.08	5688.	0.303
2691.	0.079	5691.	0.303
2694.	0.08	5694.	0.305
2697.	0.08	5697.	0.307
2700.	0.079	5700.	0.305
2703.	0.08	5703.	0.305
2706.	0.08	5706.	0.306
2709.	0.079	5709.	0.305
2712.	0.081	5712.	0.305
2715.	0.08	5715.	0.372
2718.	0.08	5718.	0.469
2721.	0.081	5721.	0.662
2724.	0.08	5724.	0.744
2727.	0.08	5727.	0.781
2730.	0.08	5730.	0.758
2733.	0.082	5733.	0.663
2736.	0.081	5736.	0.596
2739.	0.081	5739.	0.554
2742.	0.082	5742.	0.551
2745.	0.082	5745.	0.544
2748.	0.08	5748.	0.498
2751.	0.082	5751.	0.437
2754.	0.083	5754.	0.384
2757.	0.086	5757.	0.335
2760.	0.081	5760.	0.3
2763.	0.082	5763.	0.271
2766.	0.079	5766.	0.258
2769.	0.079	5769.	0.25
2772.	0.082	5772.	0.245
2775.	0.08	5775.	0.241
2778.	0.08	5778.	0.237
2781.	0.082	5781.	0.235
2784.	0.081	5784.	0.232
2787.	0.077	5787.	0.229
2790.	0.082	5790.	0.232
2793.	0.08	5793.	0.231
2796.	0.08	5796.	0.231
2799.	0.08	5799.	0.23
2802.	0.08	5802.	0.232
2805.	0.08	5805.	0.237
2808.	0.081	5808.	0.238
2811.	0.081	5811.	0.24
2814.	0.081	5814.	0.241
2817.	0.08	5817.	0.242
2820.	0.081	5820.	0.246
2823.	0.08	5823.	0.248
2826.	0.082	5826.	0.253
2829.	0.083	5829.	0.251
2832.	0.08	5832.	0.253

# AQTESOLV for Windows

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2835.	0.082	5835.	0.254
2838.	0.081	5838.	0.255
2841.	0.081	5841.	0.255
2844.	0.081	5844.	0.256
2847.	0.083	5847.	0.261
2850.	0.082	5850.	0.271
2853.	0.081	5853.	0.275
2856.	0.08	5856.	0.275
2859.	0.081	5859.	0.276
2862.	0.082	5862.	0.277
2865.	0.082	5865.	0.278
2868.	0.079	5868.	0.276
2871.	0.08	5871.	0.279
2874.	0.08	5874.	0.278
2877.	0.081	5877.	0.278
2880.	0.08	5880.	0.281
2883.	0.082	5883.	0.282
2886.	0.077	5886.	0.281
2889.	0.082	5889.	0.285
2892.	0.078	5892.	0.288
2895.	0.081	5895.	0.282
2898.	0.079	5898.	0.284
2901.	0.079	5901.	0.286
2904.	0.079	5904.	0.287
2907.	0.08	5907.	0.285
2910.	0.077	5910.	0.288
2913.	0.079	5913.	0.29
2916.	0.082	5916.	0.291
2919.	0.079	5919.	0.293
2922.	0.08	5922.	0.295
2925.	0.081	5925.	0.294
2928.	0.08	5928.	0.298
2931.	0.079	5931.	0.295
2934.	0.081	5934.	0.297
2937.	0.077	5937.	0.299
2940.	0.081	5940.	0.29
2943.	0.08	5943.	0.3
2946.	0.08	5946.	0.304
2949.	0.08	5949.	0.304
2952.	0.079	5952.	0.305
2955.	0.079	5955.	0.31
2958.	0.079	5958.	0.308
2961.	0.079	5961.	0.305
2964.	0.079	5964.	0.306
2967.	0.08	5967.	0.308
2970.	0.078	5970.	0.307
2973.	0.081	5973.	0.309
2976.	0.079	5976.	0.31
2979.	0.081	5979.	0.31
2982.	0.077	5982.	0.307
2985.	0.078	5985.	0.31
2988.	0.079	5988.	0.312
2991.	0.079	5991.	0.312
2994.	0.077	5994.	0.312
2997.	0.079	5997.	0.312
3000.	0.076	6000.	0.313

## SOLUTION

Pumping Test  
 Aquifer Model: Unconfined  
 Solution Method: Theis

## VISUAL ESTIMATION RESULTS

### Estimated Parameters

## AQTESOLV for Windows

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<u>Parameter</u>	<u>Estimate</u>	
T	2.3	cm <sup>2</sup> /sec
S	33.42	
Kz/Kr	1.	
b	12.47	ft

$$K = T/b = 0.006051 \text{ cm/sec}$$

$$S_s = S/b = 2.68 \text{ 1/ft}$$